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ABSTRACT

This kit is designed to be used as part of health, science, physical education, and home economics education at the middle school level. It provides current information about and describes student learning activities in food, nutrition, physical fitness, and ecology. Class plans are offered for five lesson topics: (1) Food supplies nutrients, which form unique dynamic body composition; (2) Food safety and sanitation prevents food borne illness; (3) Many factors influence eating and activity habits; (4) Fitness levels and eating habits influence health status; and (5) Apply nutrition and fitness knowledge when making food and activity choices. Class plan objectives are summarized at the beginning of each of the five sets of lesson plans, and 43 student worksheet handouts suitable for photocopying are provided. Selected references and instructional aids are included. (JD)

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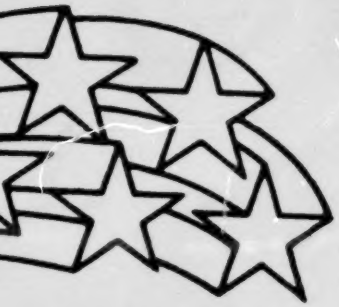
# NUTRITION Super Stars



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**Arizona Department of Education, October 1982**
**Carolyn Warner, Superintendent**
**Dr. Jim Hartgraves, Deputy Superintendent**
**Dr. Ray Ryan, Deputy Superintendent**

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Development of the 7th/8th grade Nutrition Super Stars Curriculum Kit was funded by an Arizona Nutrition Education and Training Program grant from the Food and Nutrition Division of the Arizona Department of Education. The curriculum kit contains a teacher's curriculum guide for 10 class plans and 43 student handout photocopy masters.

The curriculum was developed by the Nutrition Super Stars project staff in the Department of Nutrition and Food Science in the College of Agriculture at the University of Arizona, Tucson, AZ 85721.

This Nutrition Super Stars Curriculum Kit is the culmination of ideas, hard work, and dedication of the entire project staff.

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NUTRITION Super Stars

7th-8th GRADE

CURRICULUM KIT

*TEACHER DIRECTIONS*

There are two Nutrition Super Stars Curriculum Kits. Both curriculum kits are *wellness* education programs. The concept of *wellness* is based on medical research which shows that how we live, our lifestyle, strongly affects how well and how long we live. This means that we are personally responsible for our good health! Doctors, medicines, and hospitals help us deal with illness. Smart lifestyle habits -- eating properly, exercising, getting adequate rest, avoiding harmful substances, and preventing accidents -- help us to achieve our personal optimal health and wellness. The two Nutrition Super Stars Curriculums focus on two major lifestyle areas which affect our health and wellness -- *NUTRITION* and *EXERCISE*.

One of the two Nutrition Super Stars Curriculums was developed for the 5th-6th grades and the other curriculum for the 7th-8th grades. Both Nutrition Super Stars Curriculum Kits provide a means for students, teachers, school nurses, and school food service personnel to:

- Recognize the interrelationship of food, nutrition, and fitness on health.
- Practice eating and activity habits that promote good health and wellness.
- Learn to take appropriate responsibility for personal health care.
- Understand the interrelationship of food and energy in personal lifestyle, world food supply, and ecology.

The 7th-8th grade Nutrition Super Stars Curriculum is a sequel to the 5th-6th grade curriculum kit. Both curriculum kits cover the same general lesson topics. The emphasis and activities for each lesson topic are different in the two curriculums.

The 7th-8th grade Nutrition Super Stars Curriculum is designed to be used as a part of health, science, physical education, and home economics curriculum areas. The curriculum kit provides practical, current information and student learning experiences in food, nutrition, physical fitness, and ecology.

## 7th-8th CURRICULUM KIT CONTENTS

The curriculum kit includes a teacher's guide for five lesson topics which are covered in ten class plans plus photocopy masters of 43 student worksheet handouts. Each lesson is color coded: Lesson I - Yellow; Lesson II - Blue; Lesson III - Green; Lesson IV - Pink; Lesson V - Goldenrod. The topic for each lesson and class numbers are listed below.

**LESSON I** — Everybody's a "Star"
*(Classes 1-2)* — *Concept: Food supplies nutrients which form unique dynamic body composition.*

**LESSON II** — Creating a "Star"
*(Classes 3-4)* — *Concept: Food safety and sanitation prevents food borne illness.*

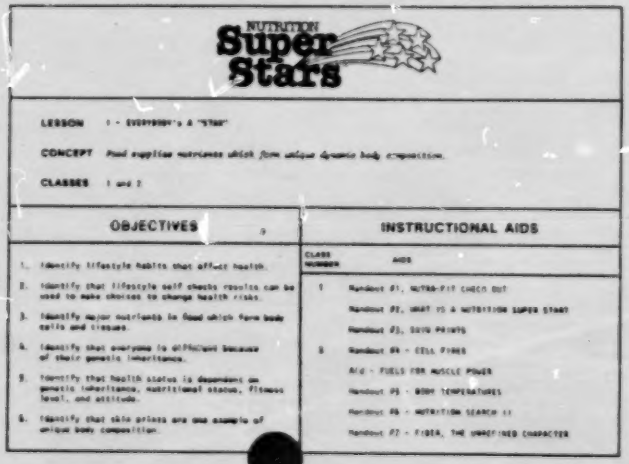
**LESSON III** — Shaping a "Star"
*(Classes 5-6)* — *Concept: Many factors influence eating and activity habits.*

**LESSON IV** — Making a "Super Star"
*(Classes 7-8)* — *Concept: Fitness levels and eating habits influence health status.*

**LESSON V** — Fueling a "Super Star"
*(Classes 9-10)* — *Concept: Application of nutrition and fitness knowledge when making food and activity choices.*

### Teacher Curriculum Guide Format

The class plan objectives are summarized at the start of each of the five sets of lesson plans. The numbers for objectives covered in each class plan are listed on the first page of the class plan. The recommended teaching aids for each class plan are also summarized on the same page as the objectives.


NUTRITION Super Stars

LESSON I - EVERYBODY'S A "STAR"

CONCEPT Food supplies nutrients which form unique dynamic body composition.

CLASSES 1 and 2

OBJECTIVES

1. Identify lifestyle habits that affect health.
2. Identify that lifestyle self checks results can be used to make choices to change health risks.
3. Identify major nutrients in food which form body cells and tissues.
4. Identify that everyone is different because of their genetic inheritance.
5. Identify that health status is dependent on genetic inheritance, nutritional status, fitness level, and attitude.
6. Identify that skin prints are one example of unique body composition.

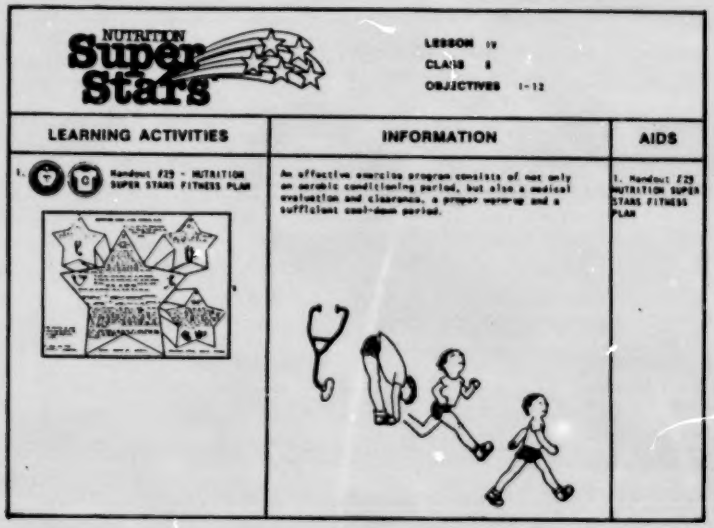
INSTRUCTIONAL AIDS

| CLASS NUMBER | AIDS |
|---|---|
| 1 | Handout #1, NUTRA-FIT CHECK OUT |
| | Handout #2, WHAT IS A NUTRITION SUPER STAR? |
| | Handout #3, SKIN PRINTS |
| 2 | Handout #4 - CELL FIBRE |
| | Aid - FUELS FOR MUSCLE POWER |
| | Handout #5 - BODY TEMPERATURES |
| | Handout #6 - NUTRITION SEARCH II |
| | Handout #7 - FIBER, THE UNREFINED CHARACTER |

The teacher's curriculum guide provides directions for conducting student learning activities listed in the class plans for each of the five lessons. The 43 student worksheet handouts are coded to class plan *LEARNING ACTIVITIES* for each of the five lessons.

Symbols Teacher Foodservice Nurse Coach are used to identify the recommended teacher or teachers for each learning activity.

The answers to student handout questions are included on the back of the photocopy masters for Handouts #4, 5, 6, 10, 12, 13, 14, 15, 16, 22, 35, 38, and 39. The *BACKGROUND INFORMATION* in the curriculum guide provides the teacher with additional information which can be used for personal information or to expand the discussions in the student handouts. Teaching *AIDS* for each learning activity are also listed in the curriculum across from the learning activity.


NUTRITION Super Stars

LESSON IV
CLASS 6
OBJECTIVES 1-12

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 1. Handout #29 - NUTRITION SUPER STARS FITNESS PLAN | An effective exercise program consists of not only an aerobic conditioning period, but also a medical evaluation and clearance, a proper warm-up and a sufficient cool-down period. | 1. Handout #29 NUTRITION SUPER STARS FITNESS PLAN |

The Instructional Aids Directory section of the Nutrition Super Stars Curriculum Kit contain directions on how to obtain *AIDS* recommended in the curriculum. The references used to develop the curriculum background information are listed in the Reference section of the curriculum.

Welcome to the world of Nutrition Super Stars who eat and exercise for fun and fitness!

NUTRITION Super Stars

FINAL EVALUATION

NUTRITION SUPER STARS EVALUATION SURVEY

Name _____ Grade level of students taught _____

Title _____ Subject Area _____

School and Address _____

_____

_____

1. My reaction to Nutrition Super Stars as a whole is:

   _____an outstanding program.
   _____a very good program.
   _____doesn't meet my needs.
   _____poor.

2. Was the curriculum class plan content clear and easily understood?

   _____Yes
   _____No
   _____Most of the time

3. Were the learning activities in the curriculum appropriate for the grade level of students?

   _____Yes
   _____No, too difficult
   _____No, too easy
   _____Appropriate but too time consuming

   Comments:

4. How did you utilize the curriculum?

   _____Used on specific lessons
   _____Used all the lessons in sequential order
   _____Used all lessons but not sequentially
   _____Other, please explain

5. Have you noticed any improvement in the eating patterns of students as a result of this program?

   _____Yes _____No _____None observed

6. Have you noticed any increase in the student participation in the school lunch or breakfast program as a result of this curriculum?

   _____Yes _____No _____None observed

7. Have you noticed any improvement in the fitness level of students as a result of this program?

_____Yes _____No _____None observed

8. Do you feel a workshop is necessary in order to implement the curriculum in the classroom?

_____Yes _____No _____Helpful but not necessary

9. Would you recommend Super Stars curriculum to other classroom teachers?

_____Yes _____No

10. How would you make the curriculum more workable for you?

Comments:

11a. Would you use this curriculum again?

_____Yes _____No

11b. Why or why not?



x

## NUTRITION-FITNESS TEST

Directions: Fill in the bracket around each letter for the *one* best answer for each question. Fill in the bracket completely. There is only *one* best answer.

1. I am a:

   a. female.
   b. male.

2. The ethnic group which best describes me is:

   a. White.
   b. Mexican American.
   c. Black.
   d. American Indian.
   e. Other.

3. I am in grade:

   a. 7th.
   b. 8th.

LESSON ONE

4. Three of the six major nutrients in food are:

   a. fat, vitamins, cellulose.
   b. water, carbohydrate, protein.
   c. cellulose, protein, fat.
   d. carbohydrates, minerals, chlorphyll.

5. Body cells form skin prints which are:

   a. a sign of early development.
   b. a sign of poor health.
   c. the same for everybody.
   d. different for everybody.

6. The process in cells which turns food nutrients into energy is called:

   a. respiration.
   b. oxygenation.
   c. oxidation.
   d. digestion.

7. Which of the following nutrients provide the most food energy?

   a. Fats and carbohydrates
   b. Carbohydrates and proteins
   c. Minerals and carbohydrates
   d. Vitamins and fats

8. The energy available in food is measured in:

   a. centimeters.
   b. degrees.
   c. calories.
   d. grams.

9. In addition to fat and carbohydrate, which nutrient can supply energy to the body?

   a. Fiber
   b. Vitamins
   c. Minerals
   d. Protein

10. A person's health risks can be partly measured by:

   a. nutrition-fitness self check.
   b. amount of nutrients eaten.
   c. family medical history.
   d. the number of illnesses in a year.

11. One sign of the body's rate of oxidation is:

   a. respiration.
   b. temperature.
   c. body weight.
   d. blood pressure.

12. Which of the following will increase the body's rate of oxidation the most?

   a. Eating
   b. Sitting
   c. Sleeping
   d. Running

13. One thing a nutrition-fitness self check can tell you is:

   a. what disease you have.
   b. what health risks you have.
   c. your flexibility level.
   d. your strength level.

14. Which of the following would add the most fiber to your diet?

   a. Hamburger and chips
   b. Peanut butter on whole wheat bread
   c. Chocolate ice cream sundae
   d. Watermelon and soda pop

15. Eating fast foods is very common. Most fast foods lack sufficient:

   a. carbohydrate.
   b. fructose.
   c. fiber
   d. fat.

16. Too much or too little fiber in the diet can result in:

a. poor health.
b. rapid growth.
c. increased blood pressure.
d. increased irritability.

17. The presence of minerals in food can be determined by:

a. dying food.
b. freezing food.
c. drying food.
d. burning food.

18. The information from the nutrition-fitness self check can help you:

a. shorten the hours you sleep.
b. identify your health risks.
c. identify your strength level.
d. identify your flexibility level.

LESSON TWO

19. Bacteria grow best in food under which condition?

a. Warm and wet
b. Cold and dry
c. Cold and wet
d. Warm and dry

20. Food poisoning is caused by:

a. over heating food.
b. freezing food.
c. bacteria and toxins.
d. toxins and algae.

21. Which of the following usually indicate a food borne illness?

a. Cramps, congestion, diarrhea
b. Nausea, vomiting, diarrhea
c. Congestion, dizziness, cramps
d. Vomiting, dizziness, congestion

22. Botulisum differs from other food poisoning because its symptoms include:

a. constipation, impaired speech, and diarrhea
b. diarrhea, chewing and swallowing.
c. headache, weakness, and double vision.
d. headache, cramps, and nausea.

23. Food borne illness can be:

a. prevented.
b. ignored.
c. heat treated.
d. cold treated.

24. One way to prevent food borne illness is:

a. keep hot foods hot.
b. keep meats at room temperature.
c. freeze all foods.
d. keep milk at room temperature.

25. Which of the following can make food handling unsafe?

a. Keep pets out of the kitchen
b. Use unwashed storage containers
c. Prepare food only when you are well
d. Wash your hands before preparing food

26. One way to destroy bacteria and toxins is:

a. heating.
b. refrigerating.
c. boiling.
d. freezing.

27. One way to stop the growth of bacteria is:

a. heating.
b. refrigerating.
c. cooling.
d. freezing.

28. Careless unsanitary food preparation causes most:

a. food consumption.
b. congestion.
c. constipation.
d. food borne illness.

29. Which food is *most* likely to be invaded by bacteria which cause food poisoning?

a. Raw meat
b. Bread
c. Apple
d. Ice cream

30. Which temperature range is ideal for bacteria growth in food?

a. 0°F-32°F
b. 40°F-140°F
c. 150°F-210°F
d. 65°C-100°C

31. Sara has a party after school. She volunteered to take potato salad. What should she do to keep it safe until after school?

a. Keep it in a covered dish in her desk
b. Keep it in a covered dish in her locker
c. Have the teacher store it in the office
d. Keep it in the refrigerator in the cafeteria

32. Fresh raw meat, poultry, and fish can be stored safely in the refrigerator for:

a. a few days.
b. two weeks.
c. one month.
d. indefinitely.

33. After Thanksgiving dinner, the food was left on the table. Two hours later, Maria ate a little bit of everything and got sick. Which food probably caused her food borne illness?

a. Cranberry sauce
b. Turkey
c. Rolls
d. Pecan pie

LESSON THREE

34. People eat vegetarian diets for many reasons. Which of the following is *not* a reason for eating a vegetarian diet?

a. Economics
b. Sex
c. Morals
d. Religion

35. Vegetarian diets vary greatly. However, they all exclude:

a. dairy products.
b. seed and nuts.
c. eggs and milk.
d. animal flesh.

36. Vegetarians who eat only plant foods and plant food products are which kind of vegetarians?

a. Lacto
b. Ovo
c. Vegans
d. Lacto-ovo

37. Lacto-ovo vegetarians are vegetarians who will eat plant foods and:

a. fish or eggs.
b. milk or eggs.
c. cheese or turkey.
d. yogurt or fish.

38. Which of the following meals would a vegan eat?

a. Beans and corn tortilla, spinach salad, and orange
b. Beans and cheese, spinach salad, and apple
c. Beans and eggs, spinach salad, and apple
d. Sunflower seeds, yogurt, and spinach salad

39. Which of the following food combinations provides all essential amino acids?

a. Peanut butter and whole wheat bread
b. Grape jelly sandwich
c. Alfalfa sprouts and tomatoes
d. Lettuce and corn tortilla

40. Which combination makes a complete protein?

a. Grains and fruit
b. Grains and cereals
c. Fruits and seeds
d. Grains and legumes

41. Which food combination is a source of complete protein?

a. Fruits and breads
b. Fruits and vegetables
c. Seeds and legumes
d. Grains and nuts

42. Which food combination will give you complete protein containing all essential amino acids?

a. Apples and nuts
b. Bean tostada
c. Tortilla and butter
d. Bouillon and rice

43. A high nutrient-density food which can be grown at home in 3 to 5 days is:

a. potatoes.
b. sprouts.
c. peanuts.
d. tomatoes.

44. Health, religion, morals, and many other factors affect food:

a. color.
b. size.
c. values.
d. nutrients.

45. Sprouts are a good source of:

a. Vitamin A, magnesium
b. iron, and Vitamin C.
c. potassium and iron.
d. Vitamin A and calcium.

46. Food values come from many sources. Which of the following best describes these sources?

a. Books, TV, relatives
b. Teachers, friends, coaches
c. Family, school, movies
d. All of the above

47. One way to know if you are getting an adequate amount of nutrients is:

a. eat only at fast food restaurants.
b. eat foods from all the food groups.
c. keep a self check of the foods you eat.
d. eat only what you like.

48. Foods from the Sweets-Fats-Alcohol Group contain:

a. lots of vitamins.
b. lots of protein.
c. low-nutrient density foods.
d. high-nutrient density foods.

LESSON FOUR

49. One indicator of the heart's fitness is:

a. body temperature.
b. respiration rate.
c. pulse rate.
d. blood pressure.

50. You can get an estimate of your maximum heart rate by:

a. squaring your heart rate.
b. multiplying your age by your heart rate.
c. adding your age to 220.
d. subtracting your age from 220.

51. The recommended minimum exercise time needed to maintain cardiovascular fitness from aerobic exercise is:

a. 30 minutes at least 3 times a week.
b. 45 minutes 2 times a week.
c. 20 minutes 5 times a week.
d. 15 minutes every day.

52. The heart rates that lie between 70% and 85% of maximum heart rate are called:

a. normal heart rate range.
b. optimal heart rate range.
c. training heart rate range.
d. fitness heart rate range.

53. Any heavy exercise program needs:

a. a warm-up exercise.
b. a relaxation exercise.
c. a flexibility exercise.
d. an agility exercise.

54. Major components of fitness include:

a. strength, flexibility, and agility.
b. agility, endurance, and flexibility.
c. body composition, strength, and speed.
d. flexibility, endurance, and strength.

55. Endurance can best be measured by a:

a. one mile run.
b. sit-ups test.
c. skinfold measurement.
d. sit and reach test.

56. Flexibility can best be measured by a:

a. one mile run.
b. sit-ups test.
c. skinfold measurement.
d. sit and reach test.

57. Strength can best be measured by a:

a. one mile run.
b. sit-ups test.
c. skinfold measurement.
d. sit and reach test.

58. The best eating plan for fitness consists of:

a. a high protein diet.
b. mostly carbohydrate.
c. a variety of foods.
d. a high fat diet.

59. Compared to inactive people, people who are physically active:

a. need more calories.
b. need less calories.
c. use fewer calories.
d. need more protein.

60. The five food groups -- (1) Fruits-Vegetables, (2) Grain-Bread or Cereal, (3) Milk and Cheese, (4) Meats-Poultry-Fish-Bean, (5) Sweets-Fat-Alcohol -- outlined in the Fitness Food Plan provides:

a. the energy requirements for you.
b. an explanation of fitness.
c. the only way to eat for fitness.
d. a guide for nutritionally well balanced eating.

61. By eating the recommended number of servings from the five food groups in the Fitness Food Plan, most people:

a. will be able to meet the body's nutrient requirement.
b. need to add only salt tablets and vitamins to their diet.
c. will need to eat supplemental protein.
d. will not be able to meet the body's nutrient requirements.

62. Body fluid loss is best replaced by:

a. cool water.
b. iced tea.
c. milk.
d. a soft drink.

63. Before heavy exercise, you should:

a. not drink anything for 2-3 hours.
b. not eat anything for 1 hour.
c. not drink anything for 1 hour.
d. not eat anything for 2-3 hours.

64. The last foods you eat before heavy exercise should be:

a. high fat and high carbohydrate.
b. low carbohydrate and high protein.
c. low fat and high carbohydrate.
d. low protein and high fat.

LESSON FIVE

65. Daphne is planning a party. She will be buying all the food. One thing she must remember when she buys the food is to:

a. keep the food at room temperature.
b. properly store the food as soon as possible.
c. buy only those foods which don't need refrigeration.
d. use only fresh foods which won't spoil.

66. When Daphne prepares food for the party, she needs to:

a. make sure all food is at room temperature before the party starts.
b. wash her hands and preparation area before preparing the food.
c. have all the food on the table two hours before the party starts.
d. freeze all the food before serving it at the party.

67. One way to prevent food borne illness is to:

a. use only fresh foods.
b. keep foods at 130°F.
c. wash food preparation areas.
d. keep food at room temperature.

68. One way to keep foods out of the danger zone is to:

a. freeze *all* food.
b. keep hot foods hot, cold foods cold.
c. keep foods at room temperature.
d. boil all foods.

69. To preserve nutrients in dry and bulk foods, it's best to:

a. store dry/bulk foods at room temperature.
b. keep dry/bulk foods in a cool dry place.
c. keep dry/bulk foods frozen.
d. keep dry/bulk foods in the sun.

70. Which foods must be refrigerated immediately?

a. Fresh meats and dairy products
b. Fresh fruits and vegetables
c. Fresh vegetables and fresh meats
d. Fresh fruits and dairy products

71. One way to find out the nutrient content of foods is to:

a. check the color.
b. check the size.
c. check the expiration date.
d. check the label.

72. Fresh fruits and vegetables keep best:

a. at room temperature.
b. in the sun.
c. in the freezer.
d. in a cool dark place.

73. The cooking method that helps conserve the most vitamin content of vegetables is:

a. broiling.
b. steaming.
c. boiling.
d. frying.

74. Meat, fish, or poultry retain the largest amount of fat when they are:

a. fried.
b. broiled.
c. baked.
d. boiled.

75. Boiling, baking, or briling food helps lower the amount of which nutrient?

a. Fiber
b. Fat
c. Minerals
d. Protein

76. The liquid left over from cooking vegetables should be:

a. stored in a warm dark place for a week.
b. thrown away immediately after cooking.
c. served with the vegetables, or used in soups.
d. stored in a warm dry place for a week.

77. Which of the following provides the most nutrients per calorie?

a. Popsicle
b. Corn chips
c. Cola
d. Orange

78. Which of the following is a high-nutrient density food you could buy from a vending machine?

a. Cola
b. Nuts
c. Potato Chips
d. Cookie

79. Which is an example of a low nutrient-density food?

a. Carrot
b. Apple
c. Juice
d. Cola

## 7th/8th TEST KEY

4. B
5. D
6. C
7. A
8. C
9. D
10. A
11. B
12. D
13. B
14. B
15. C
16. A
17. D
18. B
19. A
20. C
21. B
22. C
23. A
24. A
25. B
26. C
27. D
28. D
29. A
30. B
31. D
32. A
33. B
34. B
35. D
36. C
37. B
38. A
39. A
40. D
41. C
42. B
43. B
44. C
45. D
46. D
47. B
48. C
49. C
50. D
51. A
52. C
53. A
54. D
55. A
56. D
57. B
58. C
59. A
60. D
61. A
62. A
63. D
64. C
65. B
66. B
67. C
68. B
69. B
70. A
71. D
72. D
73. B
74. A
75. B
76. C
77. D
78. B
79. D

ON I EVERYBODY'S A "STAR"
*Concept: Food supplies nutrients which form unique dynamic body composition*

Objectives . . . . . 1

ass 1 - Handout Topics . . . . . 3

*Nutra-Fit Check Out*
*What is a Nutrition Super Star?*
*Skin Prints*

ass 2 - Handout Topics . . . . . 9

*Cell Fires*
*Body Temperatures*
*Nutrition Search II*
*Fiber - The Unrefined Character*

NUTRITION Super Stars

**LESSON** 1 - EVERYBODY's A "STAR"

**CONCEPT** *Food supplies nutrients which form unique dynamic body composition.*

**CLASSES** 1 and 2

## OBJECTIVES

1. Identify lifestyle habits that affect health.
2. Identify that lifestyle self check results can be used to make choices to change health risks.
3. Identify major nutrients in food which form body cells and tissues.
4. Identify that everyone is different because of their genetic inheritance.
5. Identify that health status is dependent on genetic inheritance, nutritional status, fitness level, and attitude.
6. Identify that skin prints are one example of unique body composition.

## INSTRUCTIONAL AIDS

| CLASS NUMBER | AIDS |
|---|---|
| 1 | Handout #1, NUTRA-FIT CHECK OUT |
| | Handout #2, WHAT IS A NUTRITION SUPER STAR? |
| | Handout #3, SKIN PRINTS |
| 2 | Handout #4 - CELL FIRES |
| | Aid - FUELS FOR MUSCLE POWER |
| | Handout #5 - BODY TEMPERATURES |
| | Handout #6 - NUTRITION SEARCH II |
| | Handout #7 - FIBER, THE UNREFINED CHARACTER |



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## OBJECTIVES

7. Identify that protein can be used to supply energy if there is not adequate available amounts of fat or carbohydrate in the diet.

8. Identify that energy nutrients in food are burned or oxidized in the cell to provide fuel or energy for body activities.

9. Identify that energy in food is measured in calories.

10. Identify that fat and carbohydrate are the two major sources of energy in food.

11. Identify that body temperature is a sign of the rate which body cells are burning or oxidizing energy nutrients.

12. Identify that physical activity increases the rate at which cells burn nutrients for fuel.

13. Identify the presence of nutrients -- water, vitamins, and minerals -- in food.

14. Identify that fiber is a nutrient in food needed for good health.

15. Identify that whole grains, fruits, and vegetables are good food sources of fiber.

16. Identify that eating too much or too little of any nutrient including fiber can result in malnutrition.

## INSTRUCTIONAL AIDS

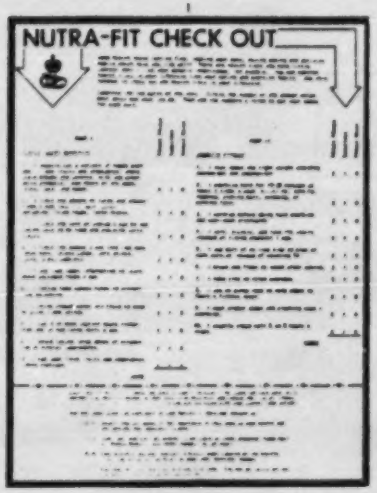
| CLASS NUMBER | AIDS |
|---|---|

NUTRITION Super Stars

**LESSON** 1

**CLASS** 1

**OBJECTIVES** 1-7

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| -INTRODUCTION-<br><br>1. Handout #1 - NUTRA-FIT CHECK OUT<br><br>  <br><br><br>This is not a pass-fail test. The purpose of the NUTRA-FIT CHECK OUT is simply to tell students how well they are doing to stay healthy in these two major areas of their lifestyle. The results can be used to encourage them to take action to minimize or eliminate the risks they identify. All in all, the NUTRA-FIT CHECK OUT will help students move their lifestyle into a *HEALTHSTYLE*. If they do, it's possible they may feel better, look better, and live longer too! | The Nutrition Super Stars Curriculum is a wellness education program. The concept of wellness education is based on a large body of medical research which tells us that what we do strongly affects how well and how long we live. In short, it says that we personally are largely responsible for our continued good health.<br><br>Doctors, drugs, and hospitals help us deal with illness. Smart lifestyle habits -- eating properly, exercising, watching our weight, getting adequate rest, avoiding harmful substances, and preventing accidents -- help us to achieve good health and wellness.<br><br>All of us want good health and wellness. But, many of us do not know how to be healthy as possible. Good health is not a matter of luck or fate. You have to work at it.<br><br> | 1. Handout #1, NUTRA-FIT CHECK OUT |



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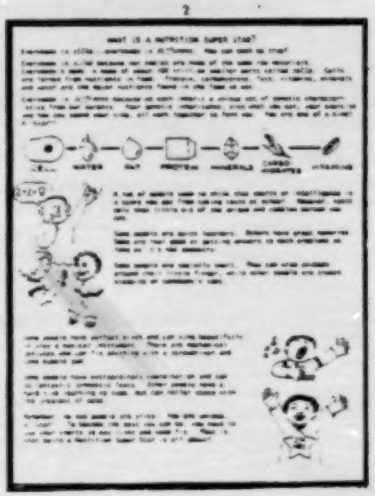
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | Good health depends on a combination of things...the environment in which you live and work...the personal traits you have inherited...the care you receive from doctors and hospitals...and the personal behaviors or habits that you perform daily, usually without much thought. All of these work together to affect your health. Many of us rely too much on doctors to keep us healthy, and we often fail to see the importance of actions we can take ourselves to look and feel healthy. You may be surprised to know that by taking action individually and collectively, you can begin to change parts of your world which may be harmful to your health.<br><br>Everyday you are exposed to potential risks of good health. Pollution in the air you breathe and unsafe highways are two examples. These are risks that you, as an individual, can't do much about. Improving the quality of the environment usually requires the effort of concerned citizens working together for a healthier community.<br><br>There are, however, risks that you can control: risks stemming from your personal behaviors and habits. These behaviors are known as your lifestyle. Health experts now describe lifestyle as one of the most important factors affecting health. In fact, it is estimated that as many as seven of the ten leading causes of death in the United States could be reduced through common sense changes in lifestyle.<br><br>The major lifestyle health risk areas are cigarette smoking, alcohol and drugs, stress control, safety, eating habits, and exercise/fitness. The brief Handout #1, NUTRA-FIT CHECK OUT will help students identify aspects of their eating/nutrition and exercise/fitness habits which are risky to their health. | |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 2. Handout #2 - WHAT IS A NUTRITION SUPER STAR?<br>  | Humans are unique and complicated creatures. It is estimated that more than 40,000 genes are needed to produce the *secret recipe* that results in you. Everybody is made of the same ingredients called nutrients - water, fat, protein, minerals, carbohydrates, and vitamins. However, there are many *variations* on the basic human recipe ingredient list. Some variations are internal, like blood type. Others are as plain as the nose on your face, the color of your eyes, or your body type.<br> <br>Our culture like all cultures, places values on different human variations. In our culture today, thin is in... blonde is beautiful...muscles are manly. It is vital to everyone's health to realize that NO BODY is perfect. We all have strengths and weaknesses. Dwelling on our weaknesses is guaranteed to ruin our self esteem and our health. Concentrating on our strengths and accepting our weaknesses is essential to good health. Smart folks realize they must accept their genetically determined body type and parts. However, because of the phenomenon of *adaptation*, we can do a lot to make the best of our body's unique raw ingredients. This gives us a sense of accomplishment and increases our feelings self worth. | 2. Handout #2, WHAT IS A NUTRITION SUPER STAR? |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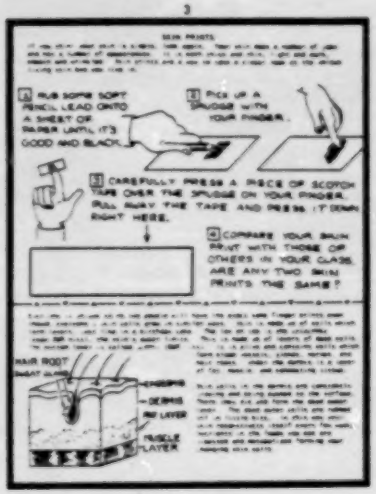
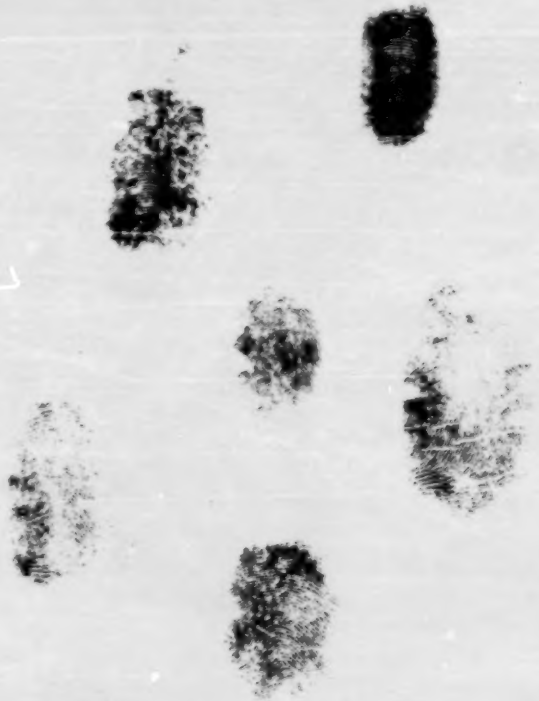
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | *Adaptation* is the remarkable ability of the body to change, according to what you ask it to regularly do, and according to the kinds of raw materials -- chiefly from foods and drinks -- you give it to work with.<br> <br>Good nutrition and fitness are the cornerstones of any action plan for good health. However, how people feel about themselves is also a major factor that determines whether or not they "tune in" to information on how to achieve good health. So, feeling good about yourself is basic to good health and wellness!<br><br>People must first feel "I'm worth it" before they attempt to change familiar and comfortable habits which may not be healthy. Despite an awakening desire to change eating and fitness habits, most folks may be rather content with old habits -- e.g., soft drinks and ice cream when they feel up-tight, bored, or in need of attention. Or perhaps you know people who say "whenever I get the urge to exercise, I sit down until it goes away. That's just the way I am." Take heart -- both attitudes and behaviors are changeable! It takes time... It takes time...It takes time. The first step is to help your students feel good about themselves to be motivated to enjoy eating well and being fit. Lifestyle choices we make daily are shaped by a powerful complex of influences within our culture. Making lifestyle choices that keep us feeling good about ourselves is the key to being fit, staying healthy, and enjoying life. | |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 3. Handout #3 - SKIN PRINTS  | Cells are the basic unit that forms all body tissues including our skin. The cells in our skin are directed by our genes to form our unique skin cells. These skin cells can be seen in our skin prints. This activity can be used to help students identify one sign of their unique and important self!  | 3. Handout #3, SKIN PRINTS |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NUTRITION Super Stars

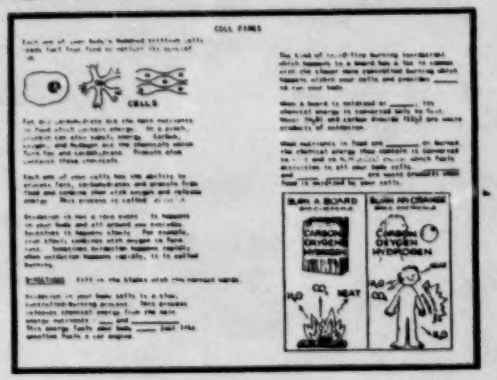
**LESSON** 1

**CLASS** 2

**OBJECTIVES** 8-16

## LEARNING ACTIVITIES

1. Handout #4 - CELL FIRES


CELL FIRES

Each one of your body's trillions of cells needs fuel that food is used to produce its source of energy.

CELLS

For most cells to produce and use the many nutrients in food which contain energy. In a pinch, cells can also supply energy. Carbon, oxygen, and hydrogen are the chemicals which form fat and carbohydrate. Proteins also contain these chemicals.

Each one of your cells has the ability to process fats, carbohydrates and proteins from food and combine them with oxygen and release energy. This process is called oxidation.

Oxidation is not a rare event. It happens in your body and all around you everyday. Sometimes it happens slowly. For example, rust. Sometimes oxidation happens rapidly, when oxidation happens rapidly, it is called burning.

BURNING fuels in the blades which are removed wastes.

Oxidation in your body cells is a slow, controlled burning process. This process releases chemical energy from the main energy nutrients ___ and ___. This energy fuels your body ___ just like gasoline fuels a car engine.

The kind of controlled burning (oxidation) which happens to a wood fire is fast in common with the slower more controlled burning which happens within your cells and provides ___ to run your body.

When a wood is oxidized or ___, its chemical energy is converted both to ___. Those heat and carbon dioxide (CO2) are waste products of oxidation.

When nutrients in food are ___ or burned the chemical energy they contain is converted to ___ and to H2O which fuels oxidation in all your body cells.

and ___ are waste products which have to be excreted by your cells.

BURN A BOARD

CARBON OXYGEN HYDROGEN

H2O CO2 HEAT

BURN AN ORANGE

CARBON OXYGEN HYDROGEN

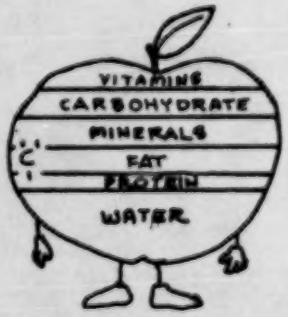
H2O CO2

## INFORMATION

All biological systems are composed of cells which have similar activities that require energy. These cell activities are what keep the body alive. Each body tissue contains a special type of cell - blood, skin, bone, digestive tract, reproductive, muscle. Each type of cell possesses unique functions. However, the basic life sustaining functions are similar in all cells.

All cells are composed of essentially the same chemicals -- mainly carbon, hydrogen, nitrogen, and oxygen -- and differ only in the proportion and arrangement of these chemicals. The nutrients in food -- carbohydrate, fat, and protein -- are made from the same basic chemicals and provide the energy needed by the cells to maintain body functions both at rest and during various forms of physical activity.

CELL



FOOD

## AIDS

1. Handout #4, CELL FIRES

Aid

FUELS FOR MUSCLE POWER

*See Instructional Aids Directory*



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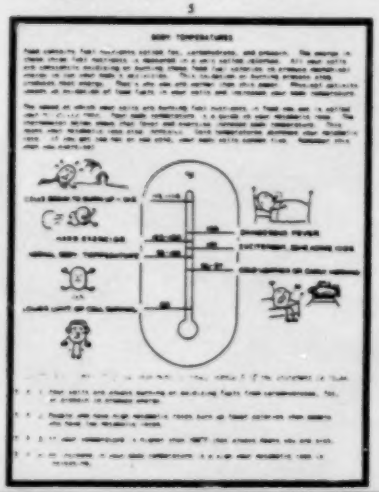
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | The chemical energy in these nutrients is released in the cells and is used by them through a controlled burning process called oxidation. A large proportion of the chemical energy trapped within the bonds of food nutrients is changed into *mechanical energy* by cellular action in the musculoskeletal system. The remaining energy released during the breakdown of nutrients in cells is converted directly to *heat energy* just like the chemical energy in gas is converted to heat energy in the home furnace. Activity speeds up your cells' energy processing activities. That is why the more active you are the hotter your body will get.<br><br>The potential energy in food nutrients that is available to your cells for controlled burning or oxidation to produce body activity or heat is measured in *calories*. The nutrients -- carbohydrate, fat, or protein -- your body uses for fuel energy depend on the kind of activity you do, activity intensity, and length of time you do it. | |
| 2. Handout #5 - BODY TEMPERATURES<br>  | The regulation of body temperature is a vital body function. The price for temperature regulation failure is death! The human body requires a very narrow temperature range to function properly. The body can tolerate only a 10°C drop in deep or core body temperature and a 5°C increase. Because of water's resistance to fluctuations in temperature, the large percentage of body weight that comes from water helps maintain our resting body temperature around 98.6°F (37°C).<br> | 2. Handout #5, BODY TEMPERATURES |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
| --- | --- | --- |
| | Body heat is directly gained from the reactions of nutrient fuel energy processing or metabolism in the cells. At rest, many body activities are occurring that use energy and release heat. This resting energy consumption is called the basal metabolic rate. When muscles become active, their heat generation is tremendous. During vigorous exercise, the metabolic rate increases from 20 to 25 times above the basal level. Fever during illness is also a sign of an increase in body temperature. If body temperature gets beyond the range the body can tolerate, cell death occurs. *Evaporation of sweat generated during activity or illness is the only major way your body cools off to an acceptable level.*<br> <br>The body can regulate its response to cold temperatures better than it can to heat. Shivering, shunting blood away from the skin to the center or core of the body, and hormonal changes all work together to help your body keep its temperature within its acceptable zone. However, if the cold stress is too strong or lasts too long, the body regulation system fails and death is the consequence.<br><br>It is normal for body temperatures to fluctuate a couple of degrees during the day. Rest results in a slow down of cell activity and thus body temperature decreases a bit. Emotional excitement and stress can cause an increase in all cell activities and in turn, increase body temperature. Measuring body temperature is one way | |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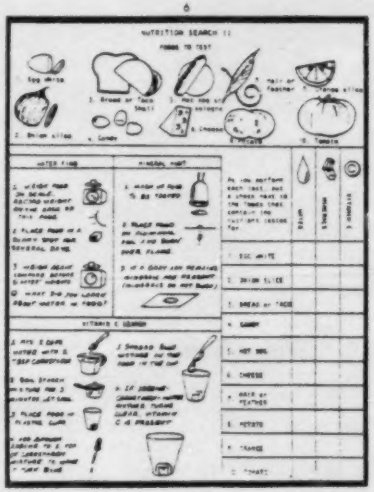
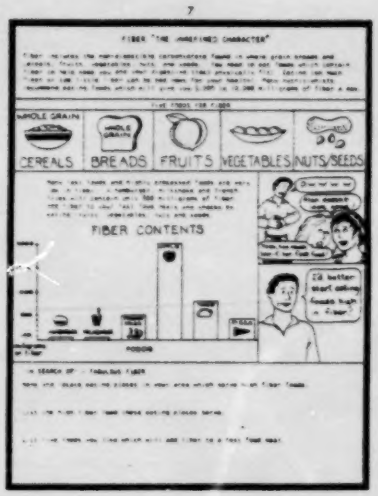
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 3. Handout #6 - NUTRITION SEARCH II<br>  | to monitor the level of cellular burning or oxidation of fuel nutrients -- carbohydrate, fat, or protein.<br><br>These are various tests which scientists use to determine which of the six major nutrients -- water, fat, protein, carbohydrate, vitamins or minerals -- are present in food.<br><br>The nutrient tests in this handout are very basic examples of tests which nutritionists and food scientists can use to analyze the nutrient composition of foods. These are rough qualitative tests. These tests will tell you if *water*, *Vitamin C*, or *minerals* are present in foods. If you would like to have your students test for the presence of fat, protein, carbohydrates -- sugar or starch -- in foods, you can use Handout #8, NUTRITION SEARCH from the 5th and 6th grade Nutrition Super Stars Curriculum.<br><br> | 3. Handout #6, NUTRITION SEARCH II |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 4. Handout #7 - FIBER, THE UNREFINED CHARACTER<br>  <br> | Fiber is what Grandma called roughage. Fiber is non-digestible carbohydrate and carbohydrate-like plant residues such as cellulose, pectin, and gums. In the human body these substances help to maintain bowel regularity by toning the muscles of the intestinal walls.<br><br>Since the turn of the century, the amount of fiber in the diet has decreased from an average of 6000 milligrams (6 grams) a day in 1900 to an average of 4000-5000 milligrams (4-5 grams) today. This decrease in fiber can be contributed to the increased usage of refined food products in convenience and fast foods.<br><br>The controversy over the relationship of fiber to health continues. Fiber advocates claim that increasing fiber in the diet may reduce "Western diseases" such as colon cancer, diverticulosis, hiatal hernia, and high serum cholesterol levels.<br><br>Fiber opponents remind us that excessive amounts of fiber can actually aggravate constipation by irritating the bowel. Adding fiber to the diet requires moderation. The digestive system needs time to adapt to increased amounts of fibrous foods. Too much fiber may cause a "bloated" or "stuffed" feeling. Also, the source of fiber is an important consideration. Different plants contain different fibers. Grain products contain bran which is mostly cellulose. Fruits and vegetables contain mostly pectin. Long term consumption of dry bran can result in intestinal obstruction requiring surgery. Also, bran can inhibit the absorption of essential minerals such as copper and calcium. Although pectin can lower serum cholesterol, wheat bran is ineffective in lowering the cholesterol levels. | 4. HANDOUT #7 FIBER, THE UNREFINED CHARACTER |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## LEARNING ACTIVITIES

DISCUSSION QUESTIONS:

-Why are people eating less fiber today than our forefathers ate in 1900?

*People eat more refined foods today. Most of the fiber has been removed from refined food products.*

-What foods which are high in fiber can be added to a fast food meal?

*Whole grain breads and cereals, vegetables, fruit, nuts and seeds will add fiber to any low fiber meal.*

-Explain why increasing the amount of fiber in the diet must be done slowly.

*The digestive system needs time to adapt to increased amounts of fibrous foods. Too much fiber may cause a "bloated" or "stuffed" feeling.*

## INFORMATION

The National Academy of Sciences' National Research Council has not established the Recommended Dietary Allowance (RDA) for fiber because of the difficulty in measuring the amount of fiber consumed and in determining all of fiber's functions.

The examples listed below give the crude fiber content of some of the foods high in fiber. Tables listing the crude fiber content which is determined in the laboratory give a close approximation of the amount of fiber taken into the diet.

FIVE FOODS FOR FIBER

| | FOOD | AMOUNT | CRUDE FIBER (gms)* |
|---|---|---|---|
| 1. | Cereals | 1/2 to 2/3 cup | |
| | All Bran | | 3.0 |
| | 40% Bran | | .9 |
| | Most ready to eat | | Trace-0.3 |
| | Oatmeal | | .5 |
| | Shredded Wheat | | .5 |
| 2. | Breads | 1 slice | |
| | Whole wheat | | .4 |
| | Enriched white | | .05-.2 |
| | Corn tortilla | | .3 |
| 3. | Fruits | 1 piece | |
| | Orange | | .8 |
| | Apple | | 1.0 |
| | Banana | | .8 |
| | Watermelon | | .3 |
| | Canteloupe | | .4 |
| 4. | Vegetables | 1/2 to 2/3 cup | |
| | Peas, brussel sprouts | | .2 |
| | Corn | | .6 |
| | Lettuce | | .5 |
| | Bean sprouts | | .5 |
| | Green beans | | .7 |
| | Potato (without skin) | | .7 |
| | Tomato | | .5-1.0 |
| | Peppers | | .7 |
| 5. | Nuts and Seeds | 1/2 cup | |
| | Walnuts | | 1.0 |
| | Sunflower seeds | | 2.0 |
| | Peanuts | | 2.0 |
| | Brazil nuts | | 2.1 |

*NOTE: 1 gram is equal to 1,000 milligrams.

## AIDS

SSON II CREATING A "STAR"
*Concept: Food safety and sanitation prevent food borne illness*

Objectives . . . . . 15

Class 3 - Handout Topics . . . . . 17

*Wanted: Dead Not Alive!*
*Showdown at the Careless Kitchen*
*Danger Zone!*
*Bacteria Round-Up*

Class 4 - Handout Topics . . . . . 25

*Food Poisoning on Trial*
*The Tale of Tom E. Ache*
*Food Safety Detective*

NUTRITION Super Stars

**LESSON** II - CREATING A "STAR"

**CONCEPT** *Food safety and sanitation prevent food borne illness.*

**CLASSES** 3 and 4

## OBJECTIVES

1. Identify that bacteria are found everywhere.
2. Identify that bacteria can be helpful or harmful to our health.
3. Identify that rapid growth bacteria need time, either oxygen or no oxygen, moisture, warm danger zone temperatures (4°C) 40°F-140°F (60°C) and food nutrients, especially protein.
4. Identify that food borne illnesses (food poisoning) are caused by excessive bacteria or toxin contamination of foods.
5. Identify that nausea, diarrhea, cramps, and vomiting are symptoms of most food borne illness (food poisoning).

## INSTRUCTIONAL AIDS

| CLASS NUMBER | AIDS |
|---|---|
| 3 | Handout #8 & #9 - WANTED: DEAD NOT ALIVE |
| | Handout #10 - SHOWDOWN AT THE CARELESS KITCHEN |
| | Handout #11 - DANGER ZONE |
| | Handout #12 - BACTERIA ROUND-UP |
| | Materials - Agar petri dishes |
| 4 | Handouts #13 & #14 - FOOD POISONING ON TRIAL |
| | Handout #15 - TALE OF TOM E. ACHE |
| | Handout #16 - FOOD SAFETY DETECTIVE |


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| OBJECTIVES | INSTRUCTIONAL AIDS |
|---|---|
| 6. Identify that symptoms of botulism food poisoning are different from symptoms of other types of food poisoning and include general weakness, constipation, headache, double vision, impaired speech, chewing, and swallowing.<br><br>7. Identify that prevention of excessive bacterial growth is the best way to avoid food borne illness (food poisoning).<br><br>8. Identify that keeping hot foods hot and cold foods cold and sanitary food handling are the keys to preventing food borne illness (food poisoning).<br><br>9. Identify that safe food handling means washing hands before handling food, washing food preparation and serving utensils and containers in hot soapy water, bandaging sores and cuts, not sneezing or coughing on food, covering stored foods, not handling food for others when you are sick, keeping insects, rodents, and pets away from food.<br><br>10. Identify that boiling foods can destroy bacteria and toxins.<br><br>11. Identify that refrigerating or freezing foods slows down bacteria growth but does not kill bacteria. | CLASS NUMBER AIDS |

NUTRITION Super Stars

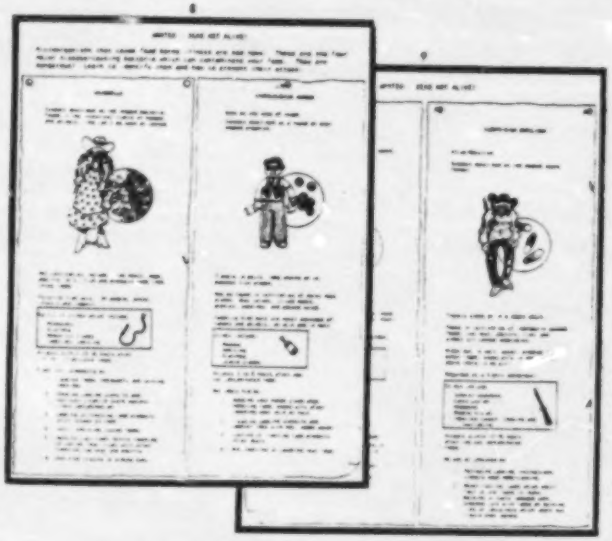
**LESSON** 11

**CLASS** 3

**OBJECTIVES** 1-6

## LEARNING ACTIVITIES

1. Handouts #8, 9 - WANTED DEAD NOT ALIVE



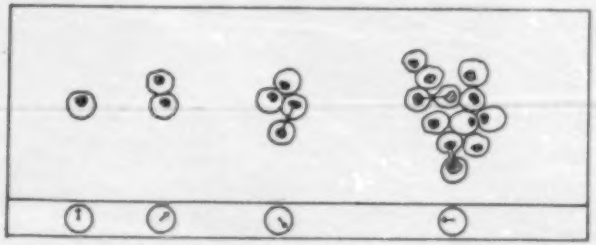
Discussing handouts with the students should help them identify the four major forms of bacteria responsible for food borne illness.

## INFORMATION

Digestion is the process by which nutrients from food are converted into a form that the body can use for energy, growth, and cell repair. Digestion can be upset when the food you eat is contaminated by microorganisms which can cause illness.

Microorganisms are tiny creatures which are found everywhere. Bacteria, parasites, yeasts, and molds are examples of microorganisms. Some microorganisms are beneficial to the body but those which cause food borne illness are bad news. These disease-carrying microorganisms are transferred to food or water by insects, animals and humans. When they reach excessive levels or produce enough toxins, food poisoning results.

Microorganisms multiply very fast at body or room temperature. Within 24 hours, one organism can reproduce to create 281,000,000,000,000 new microbes! They can cause food borne illness by growing and infecting parts of your body or by producing a toxin which is poisonous to humans.



## AIDS

1. Handouts #8 & #9, WANTED: DEAD NOT ALIVE



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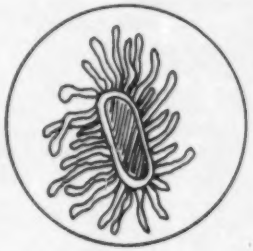
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| DISCUSSION QUESTIONS: ?<br><br>-What are microorganisms?<br><br>*Microorganisms are tiny creatures found everywhere.*<br><br>-Why are some of them bad?<br><br>*Some of them or the toxins they produce can cause food borne illness when they reach excessive levels in food or water.*<br><br>-What forms of bacteria can make you sick?<br><br>*Salmonella, staphylococcus aureus, clostridium perfringens or botulinum.*<br><br>-Where do these bacteria hide-out?<br><br>*On people, pets, insects and rodents. On skin, skin infections, hair and nasal passages. Soil, water, sewage and dust. Meat, poultry and in the center of food stored in large containers.* | The symptoms and severity of food borne illness varies with the type and amount of microorganism and the susceptibility of the individual who eats infected food. Cramps, diarrhea, vomiting, fever, nausea, and headache are general symptoms associated with food poisoning. These signs are very similar to those of the flu, so often the two are mistaken for one another.<br><br> <br><br>Bacteria are the most common cause of food borne illness. The most prevalent types are discussed below.<br><br>  <br><br>*Salmonella* organisms are found in a wide range of foods including raw animal products: meat, poultry, and eggs. They are spread by contaminated utensils or work surfaces not cleaned before use. Food can also be contaminated by unwashed hands, flies or rodents. When large amounts of salmonella are consumed along with food, they multiply in the digestive tract and cause infection. As a result, you feel sick. | |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|

*Staphylococcus aureus* or Staph, is commonly found in nose, throat, hair, skin, and skin infections of humans. This organism contaminates food through careless food handlers. Food which requires a lot of handling during preparation has an increased risk of Staph contamination. This bacteria produces a toxin which is tasteless, odorless, colorless and is able to survive boiling temperatures.

*Clostridium perfringens* are anaerobic spore-forming bacteria. Anaerobic bacteria grow without oxygen. They are found in the soil and digestive tract of humans or animals. Clostridium perfringens are often associated with raw or frozen meat and poultry. If cooking does not destroy this organism, spores can grow and multiply rapidly in food not properly refrigerated.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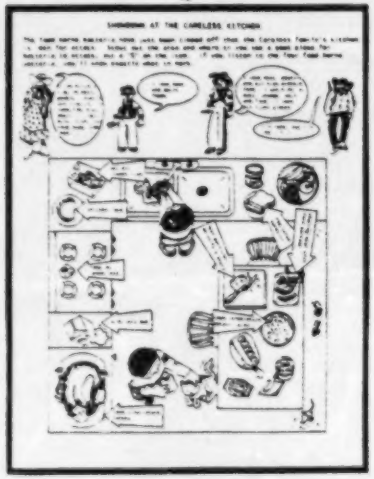
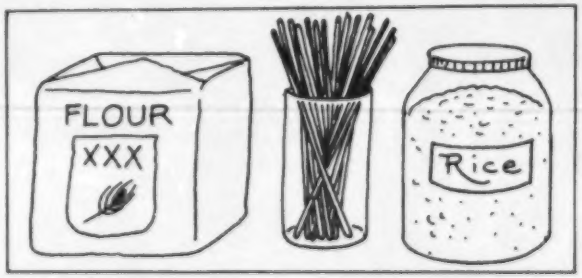
## LEARNING ACTIVITIES

2. Handout #10 - SHOWDOWN AT THE CARELESS KITCHEN




Invite the food service manager from your school or an employee from the state or local health department to speak to your class on food safety and sanitation.




## INFORMATION

*Clostridium botulinum* is another anaerobic spore-former found in soil and water. It produces a deadly toxin which causes botulism. Botulism is a rare but very serious and possibly fatal food poisoning. Clostridium botulinum is found in improperly processed non-acidic canned foods, such as meat and vegetables, especially home-canned foods.

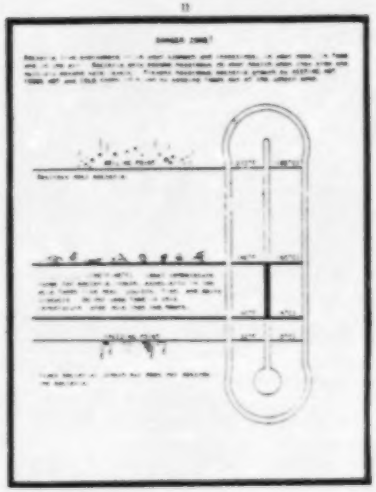
Foods which are moist, warm, low in acid, and high in protein provide a favorable environment for the growth of microorganisms. Given the right temperature, right amount of time and air, microorganisms rapidly multiply and food quickly becomes a source of enough microorganisms or their toxins to cause illness.

*Moisture*

Bacteria need water to grow. Therefore, bacteria will survive but not grow on foods low in water. Flour, cereal, and uncooked grains are just a few examples of those types of dry foods. Foods high in sugar or salt, like pickles or candy, also prevent bacteria from growing by drawing moisture out of foods.

## AIDS

2. Handout #10 SHOWDOWN AT THE CARELESS KITCHEN

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 3. Handout #11 - DANGER ZONE<br>  | <br>*Temperature*<br>Bacteria proliferate in temperatures between 40°F (4°C) and 140°F (60°C). This is called the *danger zone*! Food should be kept out of this range as much as possible. Temperature below 40°F prevent bacteria from growing. However, it is important to realize bacteria can survive freezing and resume their growth as food thaws. Slowly thawing out food at room temperature gives bacteria plenty of time to multiply to dangerous levels!<br><br>Most bacteria will be killed at temperatures above 140°F (60°C). For the spores they produce, however, this is not true. Temperatures of at least 240°F (116°C) must be reached to destroy spores. Water boils at 212°F (100°C).<br><br>*Time*<br>Time in relationship to temperature is very important for bacteria growth. Bacteria multiply to dangerous levels if contaminated foods are held in the *danger zone* for more than 2 hours. Therefore, be cautious when warming food up in an oven or stove. Keep food below 40°F (4°C) if it is to be held for 2 to 4 hours before it is prepared or used. | 3. Handout #11, DANGER ZONE |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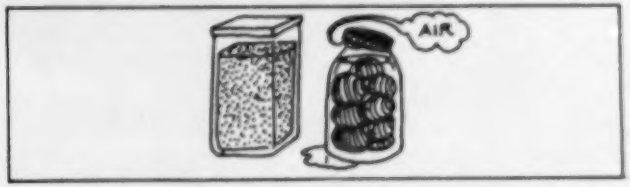
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|

*Acidity*

Foods with a low PH, or acid foods, retard the growth of bacteria. Therefore, foods like vinegar, tomatoes, citrus fruits or most other fresh fruits, are virtually safe from disease-causing bacteria. Adding small amounts of acid to food where bacteria flourish, may help retard their growth to some degree. Adding pickle relish or real mayonnaise to a meat base sandwich are ways to increase food acidity.

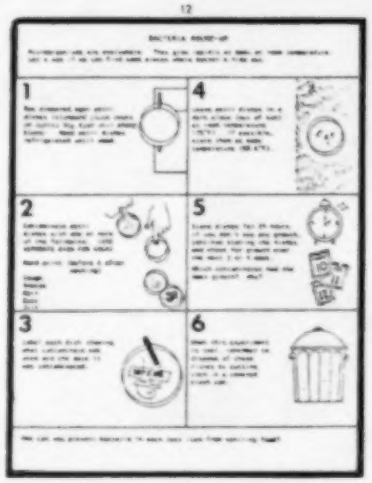
*Oxygen*

Bacteria thrive at various levels of oxygen. Those which grow well with oxygen are called *aerobes*. Some prefer no oxygen at all and are referred to as *anaerobes*. Interior of large food masses, foods stored in deep containers or improperly canned foods can support the growth of anaerobes. Bacteria which grow either with or without oxygen are called the *facultative* forms of bacteria.




*Protein*

Foods which contain a lot of protein are good mediums for bacteria growth. Therefore, fresh and cooked meat, fish, poultry, eggs, milk, pudding, casseroles, broths, meat-based soups, and gravy should be safely stored and handled to prevent food borne illness.

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 4. Handout #12 - BACTERIA ROUND-UP<br>  <br>This activity can be done as a classroom demonstration or as a group activity. | Bacteria are not the only microorganisms reponsible for food borne illness. Parasites can also play a role in making you sick. Parasites are tiny organisms which depend on living host for survival. *Trichinella spiralls*, also called trichina, is an example of this type of organisms. Trichina is a round worm found in pork or pork products and meats of wild animals like bear, rabbit, and walrus. It causes trichinosis, a serious and sometimes fatal food poisoning. To prevent this illness, all fresh pork products and wild game should be thoroughly cooked to an internal temperature of 177°F (77°C) or until all pink color is gone from the meat and meat juice.<br><br>Not all microorganisms are harmful. Only 1% are dangerous to humans. The other 99% are very helpful or indifferent to us. Certain microorganisms are native to our skin, mouth, and gastrointestinal tract. They aid in digestion of food and the break down of wastes in our body. Other microorganisms are used in the development of certain foods. Yeast helps bread dough rise, turns grape juice to wine, cereal mash to beer, and apple cider to vinegar. Molds are beneficial in cheese making, turning sour milk to cottage cheese or in the formation of yogurt.<br><br>Be careful, however! Even these beneficial organisms can cause problems. Yeast can cause food spoilage and certain molds are suspected of contributing to disease.<br> | 4. Handout #12 BACTERIA ROUND-UP<br><br>Materials<br><br>Agar petri dishes (Prepared petri dishes can be purchased. The science teacher in your school may have the material you need or you can order them from a science supply company.) |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**LESSON** 11

**CLASS** 4

**OBJECTIVES** 7-11

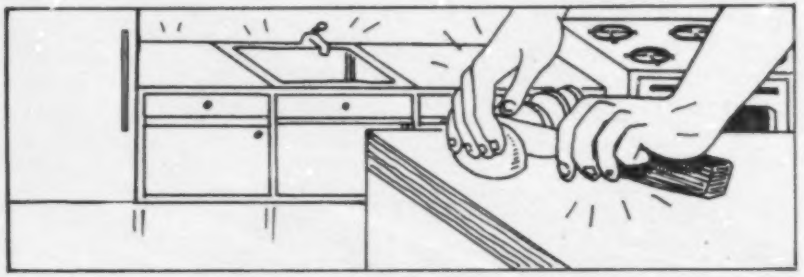
## LEARNING ACTIVITIES

The three handouts in this class will help students apply food safety and sanitation rules to prevent food poisoning.

1. Handouts #13, 14 - FOOD POISONING ON TRIAL

## INFORMATION

Food borne illness can be prevented! Prevention starts with smart food handling habits that hinder microorganisms from invading food. Safe buying, storing, preparing and serving of food are also good practices to follow to minimize the likelihood of food poisoning. These topics are discussed further in Lesson V.



Safe handling of food means cleanliness. Keeping kitchen utensils and the cook clean are practices which help prevent food contamination. Bacteria as you recall, have many favorite hideouts. Some like to hide away on people, pets, insects, and rodents. Other bacteria prefer the nasal passages of humans or animals, skin, and hair. Some like soil, water, sewage, and dust. Therefore, if hands are not cleaned after visiting the toilet or blowing one's nose, harmful bacteria can be transmitted to food. Sneezing or coughing near food or dishes also

## AIDS

1. Handouts #13 #14, FOOD POISONING ON TRIAL

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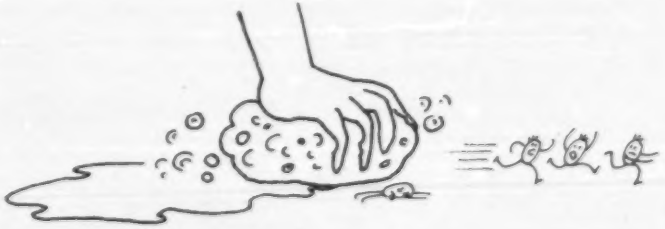
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 2. Handout #15 - TALE OF TOM E. ACHE<br> | introduces microorganisms to food. Open cuts, sores, boils, and rashes can be a source of contamination. Insects like flies or cockroaches and rodents such as mice, can also carry bacteria to food.<br> <br>To prevent food contamination, keep the environment around food clean by developing some of these healthy habits:<br>1. Wash hands before handling food, especially after a bowel movement, coughing, sneezing, blowing your nose, touching your hair or mouth, and after handling raw meat, poultry, fish or eggs.<br> <br>2. Use soap and hot water to clean utensils, dishes, countertops, and cutting boards.<br>3. Cutting boards easily harbor bacteria. It is safest to have separate boards for meats, fruits/vegetables, and breads. If this is not possible, sanitize the board using bleach in the rinse water.<br>4. Wash tops of cans and jars before opening. | 2. Handout #15, TALE OF TOM E. ACHE |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 3. Handout #16 - FOOD SAFETY DETECTIVE | 5. Avoid sneezing or coughing on food. Stay away from handling food if you are sick. 6. Use a clean bandage to cover any sores, boils, or other skin infections. 7. Minimize pest infestation by cleaning spills promptly, disposing of garbage and keeping windows and doors screened. 8. Keep pets out of the kitchen, especially when you are preparing food. 9. Keep foods out of the DANGER ZONE! Keep hot foods hot and cold foods cold. It is up to you to prevent microorganisms from contaminating your food. Making cleanliness a rule in your home is the best defense against food borne illness. Follow the rules of safe food handling to stay healthy!  | 3. Handout #16, FOOD SAFETY DETECTIVE |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SSON III SHAPING A "STAR"

*Concept: Many factors influence eating and activity habits*

Objectives. . . . . .

Class 5 - Handout Topics. . . . . .

*Food-Fitness Value Shapers*
*Vegetarianism*
*Vegetarian Diet Styles*
*Vegetarian Fitness-Food Guide*
*Fitness-Food Guide*

Class 6 - Handout Topics. . . . . .

*Protein Partners*
*Sprouts*
*Eating on Target*
*Fitness-Food Guide Countdown*

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**LESSON** III - SHAPING A "STAR"

**CONCEPT** *Many factors influence eating and activity habits.*

**CLASSES** 5 and 6

## OBJECTIVES

1. Identify that many sources influence our food and fitness values.
2. Identify that people eat vegetarian diets for different reasons including religious, moral, economics, ecological, or health.
3. Identify that there are many styles of vegetarian eating.
4. Identify that vegans are vegetarians who only eat plant foods and do not eat any animal product foods.
5. Identify that lacto-ovo vegetarians eat plant foods and milk, milk products, and eggs.

## INSTRUCTIONAL AIDS

| CLASS NUMBER | AIDS |
|---|---|
| 5 | Handout #17 - FOOD-FITNESS VALUE SHAPERS |
| | Handout #18 - VEGETARIANISM |
| | Handout #19 - VEGETARIAN DIET STYLES |
| | Handout #20 - VEGETARIAN FITNESS-FOOD GUIDE |
| | Handout #21 - FITNESS-FOOD GUIDE |
| 6 | Handout #22 - PROTEIN PARTNERS |
| | Handout #23 - SPROUTS |
| | Handout #24 - EATING ON TARGET |


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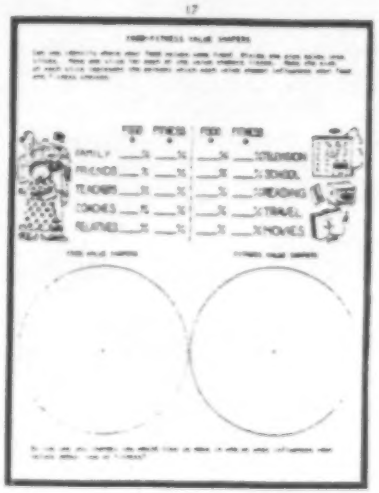
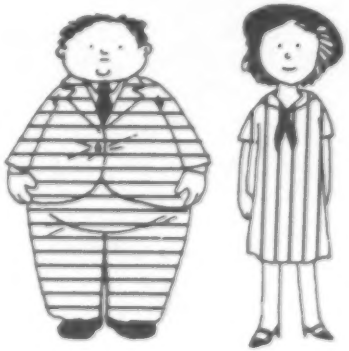
| OBJECTIVES | INSTRUCTIONAL AIDS |
|---|---|
| 6. Identify that a diet which contains meat or a vegetarian diet that is carefully selected on the basis of appropriate food guides will adequately meet nutrient needs for fitness.<br><br>7. Identify that self checks of the foods which are eaten can show how closely foods eaten in a day meet the appropriate meat containing or vegetarian food guidelines for fitness.<br><br>8. Identify that seed sprouts are high nutrient density foods and can be grown at home.<br><br>9. Identify that complete protein supplies all essential amino acids needed by the body for health.<br><br>10. Identify that combinations of plant foods will form complete protein.<br><br>11. Identify that animal foods contain complete protein. | CLASS NUMBER — AIDS<br><br>Handout #25 - FITNESS-FOOD GUIDE COUNTDOWN |

NUTRITION Super Stars

**LESSON** III

**CLASS** 5

**OBJECTIVES** 1-6

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 1. Handout #17 - FOOD-FITNESS VALUE SHAPERS  | The American culture encourages overeating and inactivity. It is not surprising that obesity is a common health problem for Americans of all ages. Dieting has become one of the great American concerns.<br><br>Very little is known about why some people are able to maintain normal weight in the midst of a culture that urges them to overeat and to be inactive while others in the same culture constantly struggle to keep their weight down. Studies of our social customs and psychological needs, which strongly influence eating and activity habits, may help us understand what shapes our personal food and fitness values and in turn, influences our weight, fitness, and health.<br><br>  | 1. Handout #17, FOOD-FITNESS VALUE SHAPERS |



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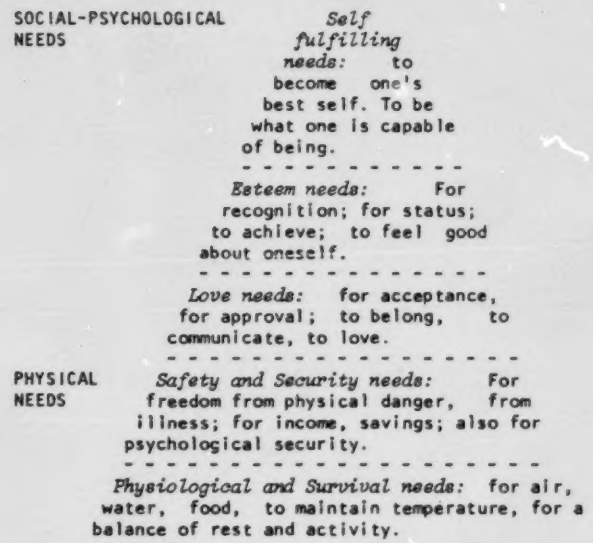
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|

A useful way to understand ourselves and others -- what we do and why we do it -- is to think of each of us as having basic *needs* which we must meet and fulfill.

A. H. Maslow has devised a system of five needs, beginning with the most basic physical needs to exist or survive, and going up to higher needs or goals. These are arranged in a "hierarchy" or pyramid:


SOCIAL-PSYCHOLOGICAL NEEDS
PHYSICAL NEEDS
*Self fulfilling needs:* to become one's best self. To be what one is capable of being.
*Esteem needs:* For recognition; for status; to achieve; to feel good about oneself.
*Love needs:* for acceptance, for approval; to belong, to communicate, to love.
*Safety and Security needs:* For freedom from physical danger, from illness; for income, savings; also for psychological security.
*Physiological and Survival needs:* for air, water, food, to maintain temperature, for a balance of rest and activity.

These five needs are not self-contained or isolated from each other. However, it is believed that you usually cannot move from a lower to a higher level or be appealed to on a higher level unless you have some minimum satisfaction on a lower level. For example,

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | you must have some food before you feel the need for saving money, or for self-esteem. "Man does not live by bread alone -- unless there is no bread," but when we say a "lower" or a "higher" need, we do not mean that the higher needs are "better" or the lower needs are "worse".<br><br>These needs act as motivators. We do things to satisfy needs. For example, we work to earn money to buy necessities, to have status, to achieve, etc. While all people are believed to have these same needs, the strength of the need varies because of individual differences in experience and learning. At any given time, one of these needs is generally the most powerful.<br><br>These needs are present throughout life -- we are never over and done with them. In infancy usually the first three levels are the most dominant. Babies cannot survive without food and water and warmth, but we know that babies who lack human contact, love and communication may also wither and die, or become more susceptible to illness. Early in life the need to "do something" -- to walk, to talk, to do things, to be independent, emerges if the lower level needs are met. In our achievement-oriented society, this need usually continues far into later life.<br><br>Our perception of our needs are influenced by our values. Our values are influenced by our culture. Many people and things form our unique personal sub cultures. Handout #17, FOOD-FITNESS VALUE SHAPERS, can help students identify what people and things in their culture influence their values about food and fitness. | |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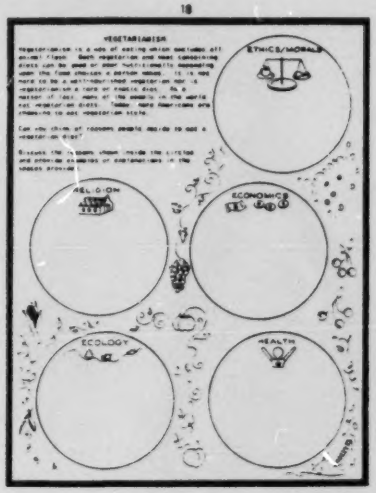
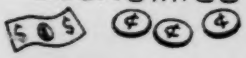
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 2. Handout #18 - VEGETARIANISM  | We are all unique individuals and thus everyone has a slightly different idea about what is acceptable or ideal to eat and why. The way people eat is closely connected with the way they live -- their values.<br><br>In the American mainstream, meat is valued as an important food for nourishment and enjoyment. Many Americans, however, do not hold this value. These people choose to be vegetarians. Handout #18, VEGETARIANISM, explores why people choose to become vegetarians.<br><br> <br><br>A vegetarian is a person who does not eat animal flesh and may or may not exclude other animal products from his or her diet. Vegetarianism is not a new way of eating. In fact, reports of vegetarian diets were recorded during biblical times. Vegetarianism is not a rare or exotic diet. The majority of the people in the world eat different types of vegetarian diets. Today more Americans are choosing to eat vegetarian diets. There are a variety of reasons why people choose vegetarian diets:<br><br>1. Religion. Trappist Monks abstain from meat because they consider it a luxury and thus in conflict with their vow of simple living. Hindus avoid meat due to their belief that souls of humans may occupy animal | 2. Handout #18, VEGETARIANISM |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| RELIGION ETHICS/MORALS ECOLOGY ECONOMICS  HEALTH | bodies and thus killing of an animal would amount to murder. Seventh Day Adventists avoid meat out of compassion for animals and as a form of self discipline.<br><br>2. Ethics/Morals. Some vegetarians abstain from meat because they feel it is morally wrong to kill other living creatures.<br><br>3. Ecology. According to some food specialists, it takes 214 calories of energy to produce one gram of feed lot beef protein and only four calories of energy to produce one gram of soybean protein. Some people consider it wasteful to use so much energy to produce meat to eat, especially in light of the limited energy sources in the world. These people also feel that plant food now being fed to animals could supply food to many hungry people in the world.<br><br>4. Economics. Animal protein sources are usually more expensive than plant protein sources in the grocery stores. People on tight budgets may find that buying fewer animal foods can help make ends meet.<br><br>5. Health. Many people want to reduce their fat intake -- most animal foods are high in fat compared to plant foods.<br><br>Many food animals are given antibiotics, hormones, and other drugs to make them grow quickly. The residual effects of these practices on humans who eat these foods are yet not known. However, some scientists theorize that much of the bacteria antibiotic resistance is due to the overuse of antibiotics in food animals. The jury is still out on this issue too.<br><br>Many people wonder if vegetarian diets meet our nutritional need. In a 1974 statement, the Food and Nutrition Board of the National Academy of Sciences said that "all | |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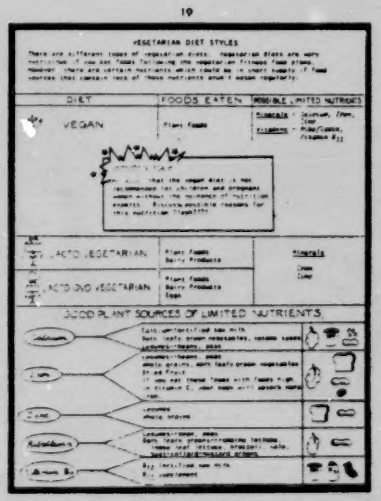
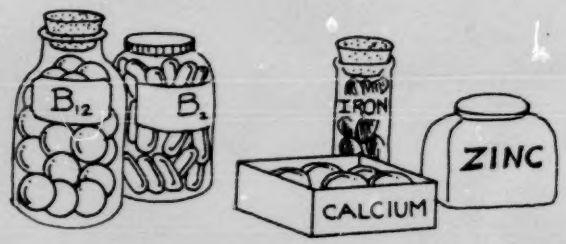
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | vegetarians can be well nourished if they make the right food choices". Studies have shown that vegetarians in the U.S. are generally well nourished and even have a lower than average incidence of health problems such as obesity, diabetes, heart disease, and diverticulosis. Be aware though that a nutritionally adequate vegetarian diet, just like a nutritionally adequate diet which contains meat, depends upon making food choices that will supply the 40 plus nutrients the body needs! | |
| 3. Handout #19 - VEGETARIAN DIET Styles  | There are different types of vegetarian diets. The vegan or strict vegetarian diet includes only plant foods. These plant foods include fruits, grains, and vegetables. The lacto-vegetarian diet includes plant foods and eggs. The lacto-ovo vegetarian diet includes plant foods, dairy products, and eggs.<br><br>Vegetarian diets contain ample amounts of carbohydrate and a lower fat content than the typical U.S. diet. Vegetarian diets contain enough protein to meet the body's needs if foods are chosen following the vegetarian diet guidelines recommended by nutritionists. However, depending upon the type of vegetarian diet one follows, there are specific nutrients which may be in short or limited supply in vegetarian diets unless foods high in those nutrients are eaten regularly. | 3. Handout #19, VEGETARIAN DIET STYLES |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | Possible limited nutrients in the vegan diet are two B vitamins -- cyanocobalamin ($B_{12}$) and riboflavin ($B_2$). The minerals calcium, iron, and zinc may also be in short supply in the vegan diet.<br>  <br><br>Vitamin $B_{12}$ (cyanocobalamin) is found in all animal foods but in very few non-animal foods. Vegans should either eat nutritional yeast supplemented with $B_{12}$, drink $B_{12}$ fortified soy milk, or take a $B_{12}$ vitamin supplement. In the human body, cyanocobalamin (Vitamin $B_{12}$) is important for its role in the synthesis of nucleic acids (RNA and DNA). Nucleic acids are the genetic material of life and contain all the cellular reproduction information and govern cell functions. Riboflavin (Vitamin $B_2$) and the mineral calcium as well as Vitamin $B_{12}$ are supplied by dairy products and are thus not a major concern for the lacto or lacto-ovo vegetarian. Iron and zinc are two other minerals which may be in short supply in the vegetarian diet and anyone following any type of vegetarian diet needs to regularly eat foods which are good sources of these nutrients. Eating food combinations which supply iron and Vitamin C simultaneously increases the absorption of iron during digestion. This is especially important for adolescent girls and women who have high needs for iron -- 18 mg a day -- to prevent the development of iron deficient anemia. | |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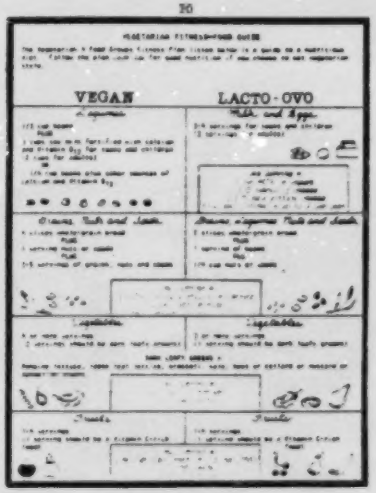
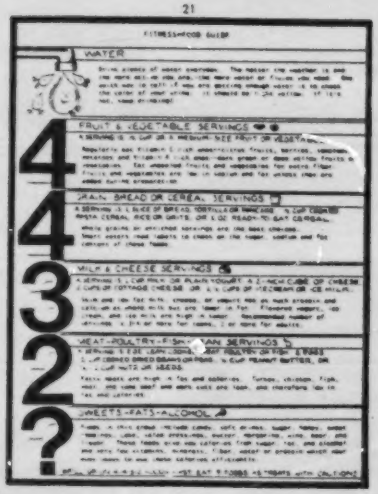
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 4. Handout #20 - VEGETARIAN FITNESS-FOOD GUIDE  | *The vegan diet is not recommended for pregnant or lactating women, small children, or teens without advice from a nutrition expert.* It is during the adolescent growth spurt that about 45% of the adult skeletal mass is formed. A pregnant or lactating woman has an increased need for total calories, protein, vitamins, especially folacin, and the minerals calcium, phosphorus, magnesium, and iodine. Rapidly growing children and teens especially need more calcium for bone growth. Children need fewer calories and therefore eat less food than adults. This fact increases the possibility that they may not get enough of the nutrients which can be in short supply in vegan diets.<br><br>The five food groups eating guide serves as a guide to eating a nutritionally adequate diet which contains meat. The vegetarian four food groups fitness eating guides serve the same purpose for vegetarian diets.<br><br> | 4. Handout #20, VEGETARIAN FITNESS-FOOD GUIDE |

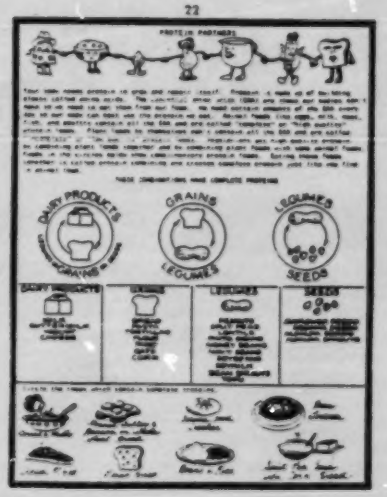
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| Handout #21 - FITNESS-FOOD GUIDE<br>  <br>21<br>FITNESS-FOOD GUIDE<br>WATER<br>FRUIT & VEGETABLE SERVINGS<br>GRAIN, BREAD OR CEREAL SERVINGS<br>MILK & CHEESE SERVINGS<br>MEAT-POULTRY-FISH-[illegible] SERVINGS<br>SWEETS-FATS-ALCOHOL<br>4<br>4<br>3<br>2<br>2 | Handout #20, VEGETARIAN FITNESS-FOOD GUIDE, and Handout #21, FITNESS-FOOD GUIDE, can be used to show students the guidelines for eating a nutritionally adequate vegetarian diet or a diet which contains meat. These guides are designed to be a simple way to translate nutritional information into food choices. | Handout #21, FITNESS-FOOD GUIDE |

NUTRITION Super Stars

**LESSON** III

**CLASS** 6

**OBJECTIVES** 7-11

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 1. Handout #22 - PROTEIN PARTNERS   | Protein seems to be the nutrient of most concern to people when they decide to eat vegetarian style. Protein is the nitrogen-containing nutrient necessary for growth and repair of all our body tissues. All body cells including skin, muscles, organs, blood, and hair all contain protein. The building blocks of protein are called amino acids. When protein is digested, it is broken down into amino acids which are absorbed and then reassembled in the body to make proteins. There are 20 different amino acids. Our bodies can make all but eight of these amino acids. The eight amino acids the body can't make are called essential amino acids. The essential amino acids are isoleucine, leucine, lysine, valine, tryptophan, pheynlalanine, threonine, and methionine. The body needs to get all eight of these amino acids in certain amounts every day in order to make body protein. A short supply of even one of these amino acids will limit how much new protein the body can make. If the body cannot make enough new protein -- the inevitable result is breakdown of body tissues such as muscle and organs. This destruction of body tissue supplies the amino acids needed for vital new protein formation in other parts of the body. If the body is regularly supplied with essential amino acids from foods you eat, body protein breakdown is prevented. | 1. Handout #22, PROTEIN PARTNERS |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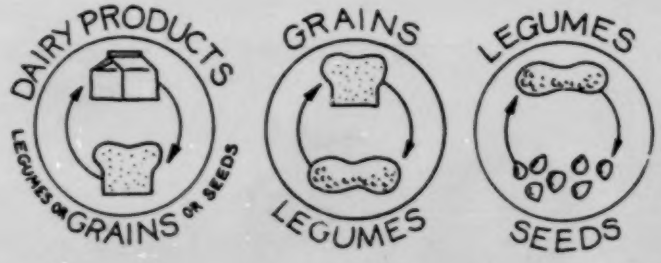
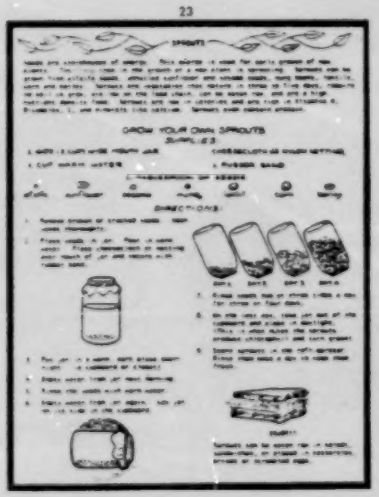
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | | |

Animal protein rich in foods like eggs, milk, meat, fish, and poultry contain complete or high quality proteins because the protein in these foods is made of all the essential amino acids in the proportions the body requires. Plant foods such as grains, legumes (dried beans and peas, lentils, and peanuts), nuts, seeds, and vegetables are incomplete or low quality proteins because they are missing or low in one or more of the essential amino acids.

Since plant foods differ in which essential amino acids are missing and which are present in adequate amounts, different foods can be combined and eaten together so their amino acid contents complement each other and form complete proteins. In this way a complete protein is made in the body by the combination of two incomplete plant proteins. This is called protein combining. Since our bodies do not store amino acids, complementary protein foods must be eaten at the same time.

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | Handout #22, PROTEIN PARTNERS, demonstrates to students how complete proteins can be supplied to the body from foods in a vegetarian diet.<br>  <br> | |
| 2. Handout #23 - SPROUTS<br>  | Students can use Handout #23, SPROUTS, to grow their own high nutrient density vegetables. Growing sprouts demonstrates how nutrients in a seed are converted in the presence of moisture and warmth to fuel for new plant growth. | 2. Handout #23, SPROUTS |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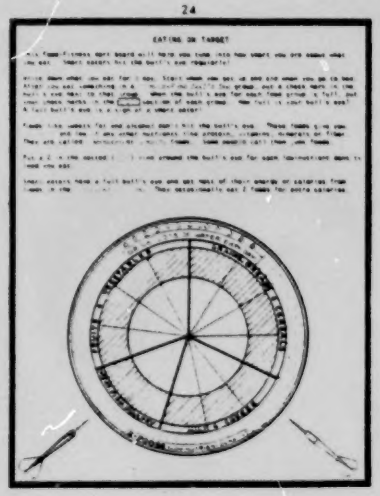
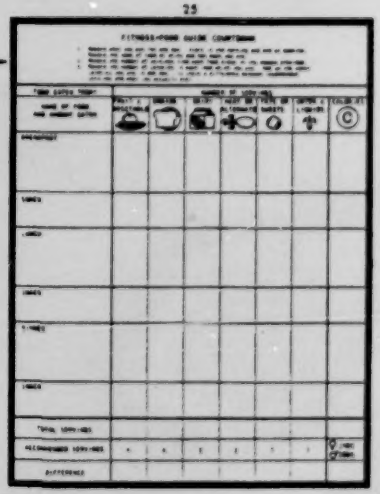
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 3. Handout #24 - EATING ON TARGET<br>  <br>Handout #25 - FITNESS-FOOD GUIDE COUNTDOWN<br>  | Handout #24, EATING ON TARGET, or Handout #25, FITNESS-FOOD GUIDE COUNTDOWN, can be used by students to do a self check of their diet which contains animal products to see if what they eat for one day meets the recommended Handout #21, FITNESS-FOOD GUIDE, eating guidelines.<br><br>*Have interested students design a self check guide for a vegetarian diet using Handout #20, VEGETARIAN FITNESS-FOOD GUIDE.* | 3. Handout #24, EATING ON TARGET and Handout #25, FITNESS-FOOD GUIDE COUNTDOWN |

ESSON IV MAKING A "SUPER STAR"
*Concept: Fitness levels and eating habits influence health status*

Objectives. . . . . 45

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*The Body Shop*
*Measure Up*
*Pulse Rate Check Out*
*Personal Fitness Test (AAHPERD)* . . . . . 55

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*Nutrition Super Stars Fitness Plan*
*Exercise Supercourse*
*Fitness Time Check Out*
*Fitness 6*
*Nutrition Fitness Hit or Myth*
*Calorie Check Out*
*Recommended Dietary Allowances (RDA) for Calories*

NUTRITION Super Stars

**LESSON** IV - MAKING A "SUPER STAR"

**CONCEPT** *Fitness levels and eating habits influence health status.*

**CLASSES** 7 and 8

## OBJECTIVES

1. Identify that pulse rate is an indication of how hard the heart is working.
2. Identify that maximum heart rate can be estimated by subtracting an individual's age from 220.
3. Identify that for cardiovascular fitness aerobic exercise needs to be done hard enough to keep the heart rate (pulse rate) in an individual's training heart rate range for 30 minutes at least three times a week.
4. Identify training heart rate range.
5. Identify that warm up and cool down exercises need to be part of any heavy exercise program.

## INSTRUCTIONAL AIDS

| CLASS NUMBER | AIDS |
|---|---|
| 7 | Handout #26 - THE BODY SHOP |
| | Handout #27 - MEASURE UP |
| | Handout #28 - PULSE RATE CHECK OUT |
| | PERSONAL FITNESS TEST |
| 8 | Handout #29 - NUTRITION SUPER STARS FITNESS PLAN |
| | Handout #30, #31, and #32 - EXERCISE SUPERCOURSE |
| | Handout #33 - FITNESS TIME CHECK OUT |
| | Handout #34 - FITNESS 6 |


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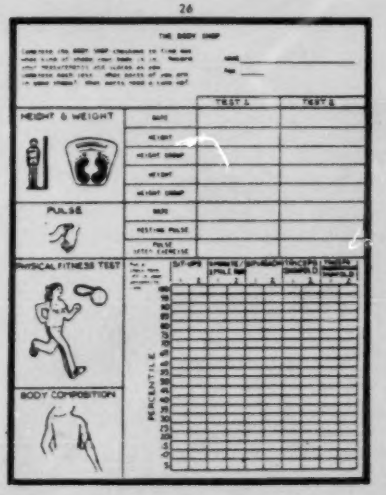
| OBJECTIVES | INSTRUCTIONAL AIDS |
|---|---|
| 6. Identify that strength, flexibility, endurance, and optimal body composition are components of fitness.<br><br>7. Identify that individual fitness levels can be evaluated by measuring performance on tests for each of the fitness components.<br><br>8. Identify that eating a variety of foods from the Fitness Food Guide is the best eating plan for fitness.<br><br>9. Identify that active people may need extra energy from foods to meet their calorie needs.<br><br>10. Identify that athletes or active people who follow the Fitness Food Plan do not need protein supplements, salt tablets, vitamin supplements, or most mineral supplements to meet their nutrition needs.<br><br>11. Identify that body fluid loss is best replaced by regularly drinking cold water.<br><br>12. Identify that before heavy exercise it is best to drink fluids and to eat foods high in carbohydrate, low in fat and moderate in protein content at least two-three hours before starting heavy exercise. | CLASS NUMBER — AIDS<br><br>Filmstrip/Cassette - NUTRITION AND EXERCISE<br><br>Film - NUTRITION: FUELING THE HUMAN MACHINE<br><br>Handout #35 - HIT OR MYTH<br><br>Handout #36 - CALORIE CHECK OUT<br><br>Handout #37 - RECOMMENDED DIETARY ALLOWANCES (RDA) FOR CALORIES |

NUTRITION Super Stars

**LESSON** IV

**CLASS** 7

**OBJECTIVES** 1, 6, 7

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 1. Handout #26 - THE BODY SHOP<br>  <br>THE BODY SHOP is designed to allow the teacher or student to keep a progress report of the student's level of physical fitness over the length of the school year. After each test, have the student record the *date* of the test and the results on THE BODY SHOP. | Fitness is considered the best way to maintain a youthful appearance. People who are fit look and feel good. People who exercise regularly will notice an increase in concentration, improved work performance, and more restful sleep.<br><br>Research shows that regular vigorous exercise helps prevent heart attacks, controls weight, and instills a feeling of well being. Also, regular vigorous exercise has been found to help people with diabetes, ulcers, nervous tension, high blood pressure, low back pain, cardio-vascular disease, depression, constipation, and insomnia.<br><br> | 1. Handout #26 THE BODY SHOP |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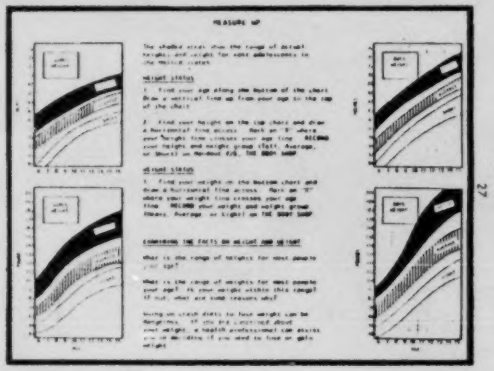
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 2. Handout #27 - MEASURE UP<br>  <br>Consultation with the school nurse is appropriate in cases of suspected abnormal growth. The nurse may compare the growth chart's data with the student's family, health, and diet history to determine if an abnormal growth pattern exists. | The age, height, and weight charts are tools commonly used to assess students' growth patterns. The growth charts in MEASURE UP are based on computerized data collected from 1963 to 1974 by the National Center for Health Statistics.<br><br>The new growth charts are best used as a screening device; they are not diagnostic devices. The charts can help the teacher and health care worker to identify children's potential health and nutritional problems. However, caution must be taken in drawing conclusions based on the charts alone. Students who are small or underweight for their age actually may be normal, but have small ancestors or a slow rate of maturation. During pubescence, girls aged 10 years or older and boys 11½ years or more may deviate from the norm for a year or so as a result of a growth spurt. Early or late maturers may have even more pronounced growth pattern deviations.<br><br>Abnormal readings should be checked 1 to 3 months later to evaluate the growth rate. Should abnormal growth pattern persist, the teacher may need to consult the school physician or nurse.<br><br>Because students are concerned with their growth, teachers must be sensitive when discussing an unusual growth pattern with the student. | 2. Handout #27 MEASURE UP |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| Accurate measurements and proper recording of the results are necessary to avoid errors.<br><br>a. Measuring Height<br><br>Height is best measured using a fixed measuring device such as a height bar. Have the student *remove* his shoes. The whole body should be carefully centered; the head held erect with a gaze straight forward. After measuring the height, have the student determine his/her height status using Handout #27, MEASURING UP, and record the results on Handout #26, THE BODY SHOP.<br><br>b. Measuring Weight<br><br>Weight is best measured using a beam balance. Any scale will do as long as the child is weighed on the same scales throughout the year.<br><br>For accurate measurements, the child should remove his shoes and wear as little clothing as possible.<br><br>After the measurement, have the student determine his/her weight status using Handout #27, MEASURE UP, and record the results on Handout #26, THE BODY SHOP. | <br> | |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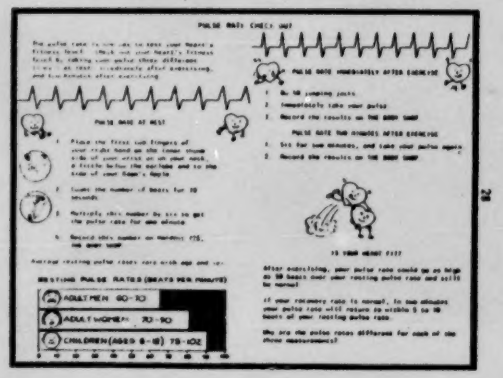
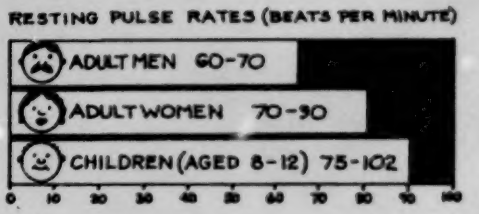
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 3. Handout #28 - PULSE RATE CHECK OUT<br>  | The oxygen from the air you breathe and nutrients from foods you eat are carried in your blood stream to the trillions of cells in your body. The capacity of the body's circulatory and respiratory systems to deliver oxygen and nutrients is part of *cardiovascular fitness*.<br><br>The heart is the key to one's cardiovascular fitness. The heart is a living pump capable of pumping the entire blood supply (5 quarts) in about 50 heart-beats. Cardiovascular fitness can be evaluated by measuring one's pulse rate. You can determine how many times your heart beats per minute under a variety of conditions by taking your pulse rate.<br><br>The average resting pulse rate varies with age and sex as listed in the chart below:<br><br>Resting Pulse-Rates Per Minute:<br><br>At Birth . . . . . .130-160<br>Infants. . . . . .110-130<br>Children . . . . . 75-102<br>Women. . . . . 70-90<br>Men. . . . . 60-70<br><br>  <br> | 3. Handout #28 PULSE RATE CHECK OUT |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| a. Demonstrate taking resting pulse:<br><br>(1) Place the first 2 fingers of your right hand on the inner thumb side of your wrist. ALTERNATIVE: Place the first 2 fingers of your left hand on your neck, a little below your ear lobe and to the side of your Adam's apple.<br><br>(2) Count the number of beats for 10 seconds.<br><br>(3) Multiply this number by six to get the pulse rate for one minute.<br><br>(4) Record the pulse rate number on Handout #26, THE BODY SHOP.<br><br>b. Take pulse rate immediately after exercise.<br><br>(1) Do 40 jumping jacks.<br><br>(2) Immediately take pulse.<br><br>(3) Record Results.<br><br>c. Take pulse rate two minutes after exercise.<br><br>(1) Sit for two minutes after doing jumping jacks.<br><br>(2) After two minutes, take the pulse rate.<br><br>(3) Record Results. | Physically fit individuals have strong heart muscles and slower pulse rates than unfit people. The conditioned heart can pump more blood per beat. Therefore, the strong heart can pump the same amount of blood with fewer beats per minute than a weak heart. The heart of a physically unfit person may beat more than 100,000 times a day. The conditioned heart may beat only about 72,000 times a day. The savings of 28,000 beats a day means the healthy, conditioned heart has more time to rest.<br><br> <br><br>People not physically fit or with cardiovascular disease may have weaker heart muscles. When exercising, these people may experience *shortness of breath, chest discomfort,* or *dizziness.* This discomfort is due to the stress on a weak heart muscle which has to beat harder and faster to supply enough oxygen to the body's tissues and organs.<br><br> <br><br>Regular aerobic exercise which is done with enough intensity and for a long enough time period will keep the heart is good shape. Once the heart is in top physical form, the pulse rate should return to within five to ten beats of its resting pulse rate two minutes after exercising. People with weak hearts may find that it takes as long as six minutes for their pulse to return to its normal resting rate. | |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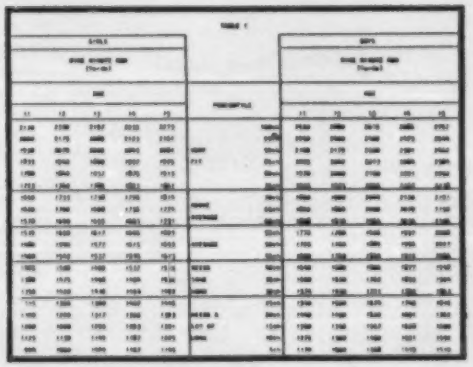
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 4. PERSONAL FITNESS TEST<br> <br><br>  | Physical fitness is a composite of endurance, strength, flexibility, cardiovascular fitness, and normal body composition. The physically fit person should be able to do normal daily physical activities without feeling fatigued. The physically fit body is able to function at its best all of the time. Diet, exercise, rest, and relaxation are vital for maintaining physical fitness.<br><br>*Endurance* is the ability of muscles to sustain strenuous activity for a long continuous period of time.<br><br>*Strength* is the ability of the muscles to exert a maximum force against a resistance or object.<br><br>*Flexibility* is the ability of a muscle to be used throughout its maximum range of motion.<br><br>*Cardiovascular fitness* is the capacity of the heart, lungs, circulatory, and respiratory systems to do work (activity) efficiently and to recover quickly when activity is finished.<br><br>*Body Composition* is the comparison of the body's fat content to the body's muscle mass. Body fat should be within normal limits and muscles well toned to maintain health. A continuous physical fitness program will assist in maintaining the proper proportions of body fat to muscle.<br><br> | 4. PERSONAL FITNESS TEST |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | The Nutrition Super Stars Fitness Test attempts to measure the key components of fitness: *Muscle Strength* and *Endurance* (sit ups); *Flexibility* (sit and reach); *Cardiovascular Endurance* (9 minute/1 mile run); and *Body Composition* (skinfold fat measurement).<br><br>The tests may be given in any gymnasium or out of doors. With the exception of the sit and reach apparatus and skinfold calipers, no special equipment is required. Administering the test does require careful planning to utilize both space and time advantageously. A station for each test should be planned and clearly marked ahead of time.<br><br>Arrangements must be made for timers and for recording all scores. Organizing the group into squads is a useful technique. Sometimes each pupil may possibly record his own scores as the test is given on Handout #26, THE BODY SHOP. Sometimes, scoring by an assistant, squad captain, or teacher is more practical. Scores may be later transferred to Handout #26, THE BODY SHOP.<br><br> | |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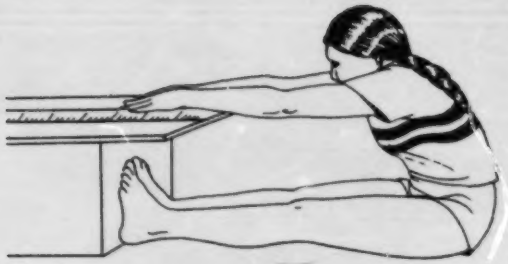
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | The students should be given reasonable warm-up prior to the testing (5 to 15 minutes). A test should not be given to any student whose medical status is questionable.<br><br>The directions for the fitness test are given in the test booklet, PERSONAL FITNESS TEST. Be certain to follow directions exactly for each test. Following the directions will enable you to compare your students' scores with the national norms.<br><br>After completing the test, the student compares the score received in each test to the percentile tables attached to the PERSONAL FITNESS TEST. These are very rough estimates of fitness. The student must be informed of this fact. If, for example, a 12 year old girl successfully completed 35 sit ups in 60 seconds, she would be at the 45th percentile. The 45th percentile means that 45 percent of the girls who take the test would fall below her score. The 45th to 55th percentile range is considered a measure of average fitness. Likewise, if a 12 year old boy ran a mile in 7 minutes and 24 seconds (7:24), he would rank at the 75th percentile or 75 percent of all boys taking the test would fall below him. He would fall in the "very fit" range. Remember, these ranges are *not* exact physical fitness scores. | |

# PERSONAL FITNESS TEST



American Alliance for Health, Physical Education, Recreation, and Dance: *Health Related Physical Fitness Test Manual.* Reston, VA.: AAHPERD, 1981.



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# NINE MINUTE/1 MILE RUN

1

Nine Minute Run or One Mile Run

To conduct the 1 mile or 9 minute run, you will need to have access to a measured running area (like a quarter mile or 440 yds or 400 meter track). It is essential to know the distance of the running area. You will also need to have a stop watch. As norms are given for both nine-minute run and one mile run, you have the option as to which test to run.

If you choose the one-mile run, you will need to time each student. Assign each student a number, have a recorder record time of each student as he/she completes the run.

Method of Recording

Start all students at the same time; start stop watch when you start the students. As the first student crosses the finish line, start calling out times. Recorder matches time to student's number. Knowing the distance of the track/running area allows you to record distance for the 9 minute run. Distance for the 9 minute run is whatever total distance the student covers in 9 minutes.

What Do The Scores Mean?

The score that the student receives on each test is then compared to percentile tables ranking by using TABLES 1 and 2 in this booklet. These are very rough estimates of fitness. The student needs to be reminded of this. If, for example, a 13 year old girl ran 1537 yards in 9 minutes, she would be at the 45th percentile, that is, 45 percent of the students who take the test would fall below her score. The 45th to 55th percentile range is considered a measure of average fitness. Likewise, if a 12 year old boy ran a mile in 7 minutes and 12 seconds (7:12), he would rank at the 80th percentile or 80 percent of all students taking the test would fall below him. He would just fall in the "very fit" range. After determining the percentile ranking, the student should record the result on Handout #26, THE BODY SHOP. It is important to remember these are ranges not exact physical fitness scores.


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TABLE 1

| GIRLS | | | | | | BOYS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NINE MINUTE RUN (Yards) | | | | | | NINE MINUTE RUN (Yards) | | | | | |
| AGE | | | | | PERCENTILE | AGE | | | | | |
| 11 | 12 | 13 | 14 | 15 | | 11 | 12 | 13 | 14 | 15 | |
| 2170 | 2370 | 2197 | 2235 | 2273 | 100th | 2520 | 2880 | 2615 | 2686 | 2757 | |
| 2000 | 2175 | 2085 | 2123 | 2161 | 95th | 2250 | 2400 | 2402 | 2473 | 2544 | |
| 1930 | 2070 | 2005 | 2043 | 2081 | VERY 90th | 2109 | 2175 | 2320 | 2391 | 2462 | |
| 1833 | 1940 | 1899 | 1937 | 1975 | FIT 85th | 2025 | 2042 | 2213 | 2284 | 2384 | |
| 1780 | 1840 | 1837 | 1875 | 1913 | 80th | 1970 | 2000 | 2150 | 2221 | 2292 | |
| 1723 | 1760 | 1785 | 1823 | 1861 | 75th | 1925 | 1975 | 2096 | 2167 | 2238 | |
| 1650 | 1733 | 1738 | 1776 | 1814 | 70th | 1890 | 1900 | 2049 | 2120 | 2191 | |
| 1620 | 1700 | 1698 | 1736 | 1774 | ABOVE 65th | 1860 | 1860 | 2000 | 2079 | 2150 | |
| 1570 | 1690 | 1655 | 1693 | 1731 | AVERAGE 60th | 1808 | 1810 | 1964 | 2034 | 2106 | |
| 1539 | 1650 | 1617 | 1655 | 1693 | 55th | 1770 | 1790 | 1926 | 1997 | 2068 | |
| 1480 | 1590 | 1577 | 1615 | 1653 | AVERAGE 50th | 1725 | 1760 | 1885 | 1956 | 2027 | |
| 1460 | 1542 | 1537 | 1575 | 1613 | 45th | 1690 | 1740 | 1844 | 1915 | 1986 | |
| 1405 | 1500 | 1499 | 1537 | 1575 | NEEDS 40th | 1640 | 1680 | 1806 | 1877 | 1948 | |
| 1380 | 1475 | 1456 | 1494 | 1532 | SOME 35th | 1600 | 1620 | 1762 | 1833 | 1904 | |
| 1356 | 1420 | 1416 | 1454 | 1492 | WORK 30th | 1575 | 1590 | 1721 | 1792 | 1863 | |
| 1345 | 1356 | 1369 | 1407 | 1445 | 25th | 1540 | 1500 | 1674 | 1745 | 1816 | |
| 1300 | 1220 | 1317 | 1355 | 1393 | NEEDS A 20th | 1440 | 1450 | 1620 | 1691 | 1762 | |
| 1200 | 1200 | 1255 | 1293 | 1331 | LOT OF 15th | 1390 | 1356 | 1557 | 1628 | 1699 | |
| 1125 | 1130 | 1149 | 1187 | 1225 | WORK 10th | 1275 | 1300 | 1450 | 1521 | 1592 | |
| 904 | 1000 | 1069 | 1107 | 1145 | 5th | 1170 | 1000 | 1368 | 1439 | 1510 | |


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## TABLE 2

| GIRLS | | | | | | BOYS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ONE MILE RUN (TIME) | | | | | | ONE MILE RUN (TIME) | | | | |
| AGE | | | | | PERCENTILE | AGE | | | | |
| 11 | 12 | 13 | 14 | 15 | | 11 | 12 | 13 | 14 | 15 |
| 7:07 | 6:57 | 6:20 | 6:44 | 6:36 | 100th | 6:04 | 5:40 | 5:44 | 5:36 | 5:40 |
| 7:46 | 7:26 | 7:10 | 7:18 | 7:39 | 95th | 6:50 | 6:27 | 6:11 | 5:51 | 6:01 |
| 8:10 | 7:44 | 7:45 | 7:39 | 8:01 | VERY 90th | 7:19 | 6:44 | 6:22 | 6:05 | 6:08 |
| 8:36 | 8:05 | 8:01 | 7:54 | 8:10 | FIT 85th | 7:30 | 6:57 | 6:33 | 6:13 | 6:18 |
| 8:57 | 8:18 | 8:12 | 8:03 | 8:24 | 80th | 7:48 | 7:12 | 6:42 | 6:21 | 6:29 |
| 9:12 | 8:36 | 8:18 | 8:13 | 8:42 | 75th | 8:00 | 7:24 | 6:52 | 6:36 | 6:35 |
| 9:29 | 8:55 | 8:27 | 8:23 | 8:59 | ABOVE 70th | 8:08 | 7:37 | 7:00 | 6:41 | 6:42 |
| 9:44 | 9:08 | 8:41 | 8:37 | 9:10 | AVERAGE 65th | 8:21 | 7:48 | 7:06 | 6:48 | 6:56 |
| 10:00 | 9:21 | 8:56 | 8:55 | 9:38 | 60th | 8:39 | 7:59 | 7:14 | 6:54 | 7:02 |
| 10:16 | 9:33 | 9:14 | 9:04 | 9:47 | 55th | 8:59 | 8:08 | 7:20 | 7:01 | 7:07 |
| 10:27 | 9:47 | 9:27 | 9:35 | 10:05 | AVERAGE 50th | 9:06 | 8:20 | 7:27 | 7:10 | 7:14 |
| 10:56 | 10:05 | 9:37 | 10:00 | 10:35 | 45th | 9:25 | 8:34 | 7:40 | 7:15 | 7:23 |
| 11:12 | 10:22 | 9:57 | 10:20 | 10:51 | NEEDS 40th | 9:46 | 8:51 | 7:51 | 7:24 | 7:30 |
| 11:29 | 10:39 | 10:12 | 10:40 | 11:43 | SOME 35th | 10:10 | 9:10 | 8:02 | 7:34 | 7:41 |
| 11:51 | 11:00 | 10:31 | 11:11 | 12:05 | WORK 30th | 10:40 | 9:30 | 8:24 | 7:54 | 7:52 |
| 12:10 | 11:35 | 10:56 | 11:43 | 12:21 | 25th | 11:31 | 10:00 | 8:35 | 8:02 | 8:04 |
| 12:36 | 11:57 | 11:23 | 12:21 | 13:04 | NEEDS A 20th | 12:02 | 10:42 | 8:50 | 8:15 | 8:26 |
| 13:16 | 12:35 | 12:20 | 13:56 | 14:07 | LOT OF 15th | 12:40 | 11:20 | 9:09 | 8:43 | 8:48 |
| 14:41 | 13:34 | 13:09 | 15:20 | 15:25 | WORK 10th | 13:37 | 12:07 | 9:39 | 9:30 | 9:25 |
| 16:56 | 14:46 | 14:55 | 16:59 | 16:22 | 5th | 15:25 | 13:41 | 10:23 | 10:32 | 10:37 |


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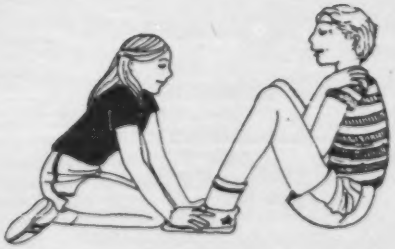
# 2

## SIT-UPS



### Equipment

Clean floor, mat, or dry turf and stop watch.

### Description

The pupil lies on his back with his knees bent, feet on the floor with the heels between 12 and 18 inches from the buttocks. The angle at the knees should be less than 90 degrees. While lying on the floor, the pupil crosses his arms on the chest by placing his hands on the opposite shoulders. His feet are held by his partner to keep them in touch with the surface. The pupil curls to a sitting position by contracting his abdominal muscles. The arms must contact the chest at all times. The chin must remain in a tucked position. The sit up is accomplished when the elbows touch the thighs. The pupil returns to the starting position before he sits up again. The timer gives the signal "ready-go", and the sit-up performance is started on the word "go". Performance is ended on the word "stop". The number of correctly executed sit-ups performed in 60 seconds shall be the score.

### Rules

1. Only one trial shall be allowed unless the teacher believes the pupil has not had a fair opportunity to perform.

2. No resting is permitted between situps.

### Scoring

Record the number of correctly executed sit-ups the pupil is able to do in 60 seconds. A foul nullifies the count for that sit-up. The watch is started on the word "go" and stopped on the word "stop". The student should compare the test score to the percentile rank by using TABLE 3. After determining the percentile ranking, the student should record the result on Handout #26, THE BODY SHOP.


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TABLE 3

| GIRLS | | | | | | BOYS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIT-UP (FLEXED LEG) (NUMBER PERFORMED IN 60 SECONDS) | | | | | | SIT-UP (FLEXED LEG) (NUMBER PERFORMED IN 60 SECONDS) | | | | | |
| AGE | | | | | PERCENTILE | AGE | | | | | |
| 11 | 12 | 13 | 14 | 15 | | 11 | 12 | 13 | 14 | 15 |
| 55 | 61 | 60 | 57 | 64 | 100th | 61 | 68 | 70 | 70 | 69 |
| 50 | 52 | 51 | 51 | 56 | 95th | 51 | 56 | 58 | 59 | 59 |
| 46 | 48 | 48 | 48 | 50 | 90th VERY FIT | 48 | 52 | 54 | 54 | 55 |
| 44 | 45 | 46 | 45 | 47 | 85th | 46 | 50 | 52 | 52 | 52 |
| 42 | 43 | 43 | 43 | 45 | 80th | 44 | 48 | 50 | 51 | 50 |
| 40 | 41 | 41 | 42 | 43 | 75th | 42 | 46 | 48 | 49 | 49 |
| 39 | 40 | 40 | 40 | 41 | 70th ABOVE | 41 | 45 | 46 | 48 | 48 |
| 37 | 40 | 39 | 39 | 41 | 65th AVERAGE | 40 | 43 | 45 | 46 | 47 |
| 36 | 39 | 37 | 38 | 40 | 60th | 39 | 42 | 44 | 45 | 46 |
| 35 | 37 | 36 | 37 | 38 | 55th | 38 | 40 | 42 | 44 | 45 |
| 34 | 36 | 35 | 35 | 37 | 50th AVERAGE | 37 | 39 | 41 | 42 | 44 |
| 33 | 35 | 34 | 34 | 35 | 45th | 35 | 38 | 40 | 41 | 42 |
| 32 | 33 | 33 | 33 | 33 | 40th NEEDS | 34 | 36 | 39 | 40 | 41 |
| 30 | 32 | 32 | 32 | 32 | 35th SOME | 33 | 35 | 38 | 39 | 40 |
| 29 | 31 | 30 | 31 | 31 | 30th WORK | 31 | 33 | 36 | 38 | 39 |
| 28 | 30 | 29 | 30 | 30 | 25th | 30 | 31 | 35 | 36 | 38 |
| 26 | 29 | 27 | 28 | 28 | 20th NEEDS A | 28 | 30 | 33 | 35 | 36 |
| 24 | 27 | 25 | 26 | 27 | 15th LOT OF | 26 | 28 | 31 | 33 | 34 |
| 21 | 23 | 23 | 24 | 25 | 10th WORK | 23 | 25 | 29 | 31 | 31 |
| 19 | 19 | 18 | 20 | 20 | 5th | 17 | 19 | 25 | 27 | 28 |


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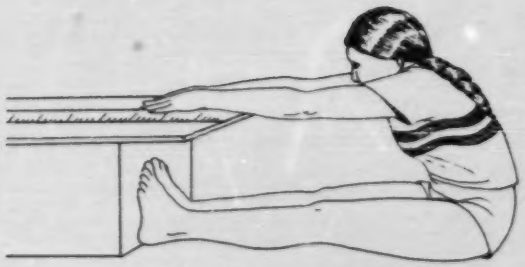
# 3

## SIT AND REACH



**Equipment**

The test apparatus consists of a sturdy box 12 inches high with a measuring scale placed on top. The scale's 23 cm mark is placed in line with the side against which the pupil's feet will be placed. This apparatus can be improvised by using a narrow bench and a meter stick. The test apparatus should be placed against a wall to prevent the apparatus from sliding away from the pupil.

**Description**

First, the student removes his shoes. Then, the pupil sits down at the test apparatus with his feet shoulder-width apart and his legs fully extended. The feet are placed flat against the side of the box. The hands are placed on top of each other and the arms are extended forward. After assuming this position, the student reaches forward along the measuring scale four times. On the fourth trial, the maximum reach is held for one second.

**Rules**

The test must be repeated if the pupil *does not* a) reach with both hands evenly; or b) keep both legs straight. The tester should place one hand on the knees to prevent the knees from bending.

**Scoring**

The student should compare the SIT AND REACH test score to the percentile rank by using TABLE 4. After determining the percentile ranking, the student should record the result on Handout #26, THE BODY SHOP.


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TABLE 4

| GIRLS | | | | | | BOYS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIT AND REACH (cm) | | | | | | SIT AND REACH (cm) | | | | | |
| AGE | | | | | PERCENTILE | AGE | | | | | |
| 11 | 12 | 13 | 14 | 15 | | 11 | 12 | 13 | 14 | 15 |
| 41 | 46 | 49 | 49 | 49 | 100th | 38 | 42 | 41 | 43 | 47 |
| 37 | 40 | 43 | 44 | 46 | 95th | 34 | 35 | 36 | 39 | 41 |
| 36 | 38 | 40 | 42 | 44 | VERY 90th | 32 | 32 | 34 | 37 | 39 |
| 34 | 36 | 38 | 40 | 43 | FIT 85th | 31 | 31 | 33 | 36 | 37 |
| 33 | 35 | 37 | 39 | 42 | 80th | 30 | 30 | 32 | 34 | 36 |
| 32 | 34 | 36 | 38 | 41 | 75th | 29 | 29 | 30 | 33 | 34 |
| 31 | 33 | 35 | 36 | 40 | 70th | 28 | 29 | 29 | 31 | 33 |
| 30 | 32 | 33 | 36 | 39 | ABOVE 65th | 27 | 28 | 28 | 30 | 32 |
| 30 | 32 | 32 | 35 | 37 | AVERAGE 60th | 26 | 27 | 27 | 30 | 32 |
| 29 | 31 | 31 | 34 | 37 | 55th | 26 | 27 | 27 | 29 | 31 |
| 29 | 30 | 31 | 33 | 36 | AVERAGE 50th | 25 | 26 | 26 | 28 | 30 |
| 28 | 29 | 30 | 32 | 34 | 45th | 24 | 25 | 25 | 27 | 29 |
| 27 | 28 | 29 | 31 | 33 | NEEDS 40th | 23 | 24 | 24 | 26 | 28 |
| 26 | 27 | 27 | 30 | 32 | SOME 35th | 23 | 23 | 23 | 25 | 27 |
| 25 | 26 | 26 | 29 | 32 | WORK 30th | 22 | 22 | 22 | 24 | 26 |
| 24 | 25 | 24 | 28 | 31 | 25th | 21 | 21 | 20 | 23 | 24 |
| 23 | 23 | 23 | 26 | 30 | NEEDS A 20th | 20 | 20 | 19 | 22 | 23 |
| 22 | 22 | 22 | 24 | 26 | LOT OF 15th | 18 | 18 | 18 | 21 | 22 |
| 20 | 20 | 20 | 23 | 25 | WORK 10th | 16 | 16 | 15 | 18 | 19 |
| 16 | 15 | 17 | 18 | 19 | 5th | 12 | 13 | 12 | 15 | 13 |


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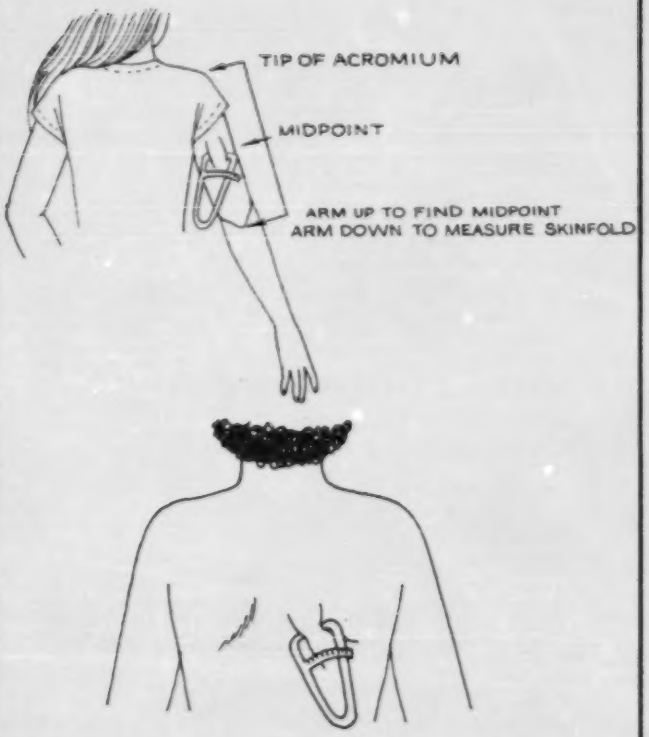
# 4

## TRICEPS/SUBSCAPULAR SKINFOLD




Equipment

The Ross Laboratories ADIPOMETER skinfold caliper is used for obtaining the skinfold fat measurements

Description

Skinfolds are made up of the skin and a layer of subcutaneous fat pulled away from the underlying muscle (see illustration). While there are a number of body sites where skinfolds can be measured, the tricep skinfold is easy to use and is a fairly accurate indicator of body fat.

Triceps skinfold is taken on the left upper arm.

1. First, measure the length of the upper arm with the forearm at a right angle to the upper arm (see illustration). Locate the bony projection at the shoulder (the tip of the acromium) and the body projection at the elbow (olecranon). Use the measuring tape to measure the distance between these two points. Find the mid-point of the upper arm and mark with a felt tip pen.

2. Drop the arm by the side of the body. Grasp the skinfold with the thumb and index finger just above the midpoint.

3. Measure the skinfold with the calipers. Apply enough pressure to the calipers so the black lines are aligned.

4. Record the skinfold measurement in millimeters on THE BODY SHOP - Handout #17.

Subscapular skinfold is also an accurate measurement for determining body fat. If time permits, this measurement can also be taken either by a nurse in the nurse's office or as a classroom demonstration with student volunteers. This measurement is taken at a point just below the bottom of the shoulder blade in the line of natural cleavage. Have the child clasp hands behind the back. Locate the bottom of the shoulder blade and mark with a felt tip pen. Grasp and measure the thickness of the skinfold just below your marked point. (see illustration). Measure the skinfold with the calipers. Record the measurement on THE BODY SHOP - Handout #17.

Scoring

The skinfold measurement is registered on the caliper's scale which measures from 0-60mm in 2mm increments. Measure the skinfold three times. Then record the average of the three measurements. If the three measurements are 12, 10, and 14, the number recorded will be 12. The recommended procedure is to measure the sum of the tricep and sub-scapular skinfold. However, the tricep skinfold is recommended if only one skinfold is measured. The student should compare the skinfold test score to the percentile rank by using TABLES 5 and 6. After determining the percentile ranking, the student should record the result on Handout #26, THE BODY SHOP.

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TABLE 5

| GIRLS TRICEP SKINFOLD (mm) AGE | | | | | | BOYS TRICEP SKINFOLD (mm) AGE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 12 | 13 | 14 | 15 | PERCENTILE | 11 | 12 | 13 | 14 | 15 |
| 6 | 6 | 6 | 7 | 7 | 95th | 5 | 5 | 4 | 4 | 4 |
| 7 | 7 | 7 | 8 | 9 | 90th | 6 | 6 | 5 | 5 | 5 |
| 9 | 9 | 9 | 11 | 12 | 75th | 7 | 7 | 7 | 6 | 6 |
| 12 | 12 | 12 | 14 | 15 | 50th | 10 | 9 | 9 | 8 | 8 |
| 15 | 16 | 17 | 18 | 20 | 25th | 14 | 13 | 13 | 12 | 11 |
| 20 | 22 | 23 | 23 | 25 | 10th | 19 | 20 | 19 | 17 | 16 |
| 23 | 25 | 26 | 27 | 29 | 5th | 22 | 23 | 23 | 21 | 21 |

WEIGHT REDUCTION SHOULD NOT BE CONSIDERED

ABOVE AVERAGE

AVERAGE

WEIGHT REDUCTION MIGHT BE CONSIDERED



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TABLE 6

| GIRLS | | | | | | BOYS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM OF TRICEPS PLUS SUBSCAPULAR SKINFOLD (mm) | | | | | | SUM OF TRICEPS PLUS SUBSCAPULAR SKINFOLD (mm) | | | | | |
| AGE | | | | | PERCENTILE | AGE | | | | | |
| 11 | 12 | 13 | 14 | 15 | | 11 | 12 | 13 | 14 | 15 |
| 8 | 9 | 10 | 10 | 11 | WEIGHT REDUCTION 100th | 8 | 8 | 7 | 7 | 8 |
| 11 | 11 | 12 | 13 | 14 | SHOULD NOT BE 95th | 9 | 9 | 9 | 9 | 9 |
| 12 | 12 | 13 | 15 | 16 | CONSIDERED 90th | 10 | 10 | 10 | 9 | 10 |
| 13 | 13 | 14 | 16 | 17 | 85th | 11 | 10 | 10 | 10 | 11 |
| 14 | 14 | 15 | 17 | 18 | 80th | 12 | 11 | 11 | 11 | 11 |
| 15 | 15 | 16 | 18 | 20 | 75th | 12 | 11 | 12 | 11 | 12 |
| 16 | 16 | 17 | 19 | 21 | ABOVE AVERAGE 70th | 12 | 12 | 12 | 12 | 12 |
| 16 | 17 | 18 | 20 | 22 | 65th | 13 | 13 | 12 | 12 | 13 |
| 17 | 17 | 19 | 21 | 23 | 60th | 14 | 13 | 13 | 13 | 13 |
| 18 | 19 | 20 | 22 | 24 | 55th | 15 | 14 | 14 | 13 | 14 |
| 19 | 19 | 20 | 24 | 25 | 50th | 16 | 15 | 15 | 14 | 14 |
| 20 | 21 | 22 | 25 | 26 | 45th | 16 | 15 | 16 | 14 | 15 |
| 21 | 22 | 23 | 26 | 28 | 40th | 17 | 16 | 17 | 15 | 16 |
| 22 | 24 | 25 | 27 | 29 | AVERAGE 35th | 19 | 17 | 18 | 16 | 18 |
| 23 | 25 | 27 | 30 | 32 | 30th | 20 | 19 | 19 | 18 | 18 |
| 25 | 27 | 30 | 32 | 34 | 25th | 22 | 21 | 22 | 20 | 20 |
| 28 | 31 | 33 | 35 | 37 | WEIGHT REDUCTION 20th | 24 | 24 | 25 | 23 | 22 |
| 31 | 35 | 39 | 39 | 42 | MIGHT BE 15th | 28 | 27 | 29 | 27 | 25 |
| 36 | 40 | 43 | 42 | 48 | CONSIDERED 10th | 33 | 33 | 36 | 31 | 30 |
| 42 | 48 | 51 | 52 | 56 | 5th | 38 | 44 | 46 | 37 | 40 |



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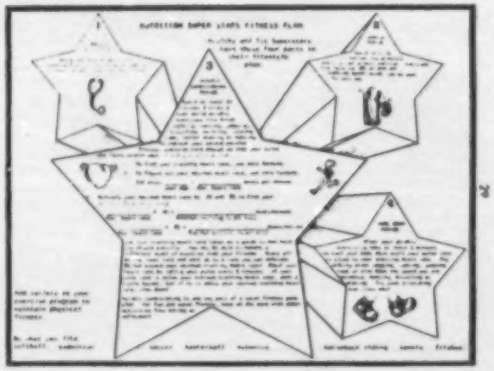
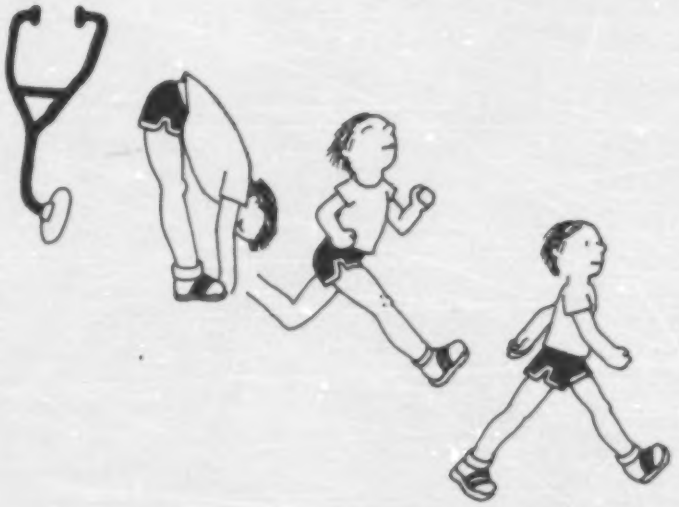
NUTRITION Super Stars

**LESSON** IV

**CLASS** 8

**OBJECTIVES** 1-12

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 1. T C Handout #29 - NUTRITION SUPER STARS FITNESS PLAN  | An effective exercise program consists of not only an aerobic conditioning period, but also a medical evaluation and clearance, a proper warm-up, and a sufficient cool-down period.  | 1. Handout #29 NUTRITION SUPER STARS FITNESS PLAN |



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| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|

FITNESS FLASH

Encourage students to develop their own exercise program to improve and maintain physical fitness. Studies have shown students who are more physically fit do better in school. Physical activity also reduces tension, anxiety, depression and increases well-being.

Before starting an exercise program, it is a smart idea to have a medical evaluation and clearance for exercise. The risk of a serious health problem may limit or preclude starting strenuous exercise. Therefore, a medical evaluation by a physician is suggested to help identify those individuals who could have serious health problems which could make strenuous exercise dangerous to their health! Fewer than 2 to 5% of the people between the ages of 5 to 25 have a risk of a serious health problem, but it would be a wise and preventive practice to have youngsters evaluated, especially if they plan to participate in competitive sports.

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| Aerobic Conditioning Period<br> | Cardiovascular fitness is dependent upon four factors: *intensity*, *duration*, *frequency*, and *type of activity*. The intensity of exercise is measured by the heart rate. For aerobic conditioning, one must increase the heart rate to 70% of the maximum heart rate. The *duration* of exercise is critical in aerobic conditioning. The participant must exercise continuously for 20 to 40 minutes at 70% to 85% of the maximum heart rate. An exercise *frequency* of at least three times a week is essential for both the beginner and the conditioned individual to maintain cardiovascular fitness. Many *types of activity* are too low in intensity or duration to improve cardiovascular fitness. Baseball, golf, and bowling are low intensity activities which do not enhance cardiovascular fitness. Aerobic exercises such as dancing, jogging, swimming, and brisk walking are high intensity activities which promote cardiovascular fitness. A conditioning period of several weeks is recommended before advancing into an intense aerobic routine. The beginner should limit the initial workouts to 15 to 20 minutes with intermittent recovery intervals. For the recovery interval, 30 to 60 seconds of brisk walking will enable the beginner to extend the exercise duration. In time, the person devoted to regular aerobic exercise will derive physical and psychological benefits from the routine.<br> | |


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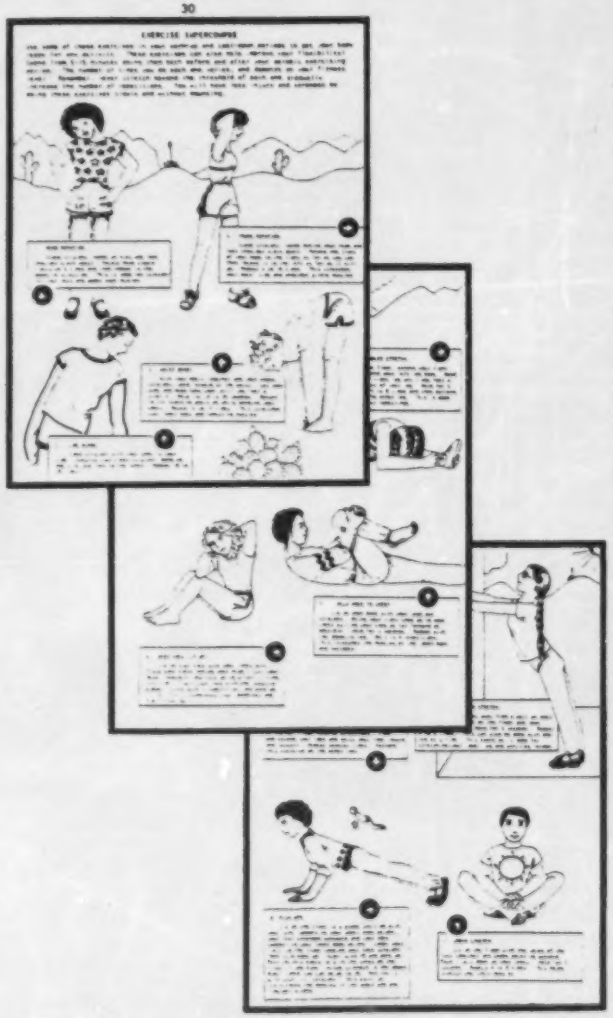
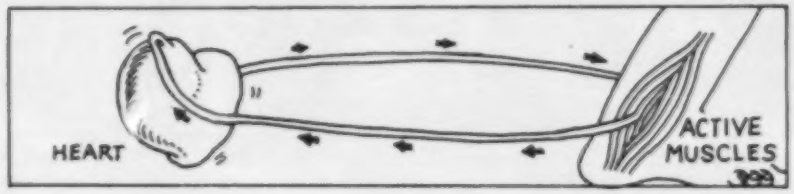
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 2. T C Handouts #30, 31, and 32 EXERCISE SUPERCOURSE  | The warm-up period is important for preparing the body for the aerobic conditioning period. Some current studies have shown abnormal heart activity can occur the first few seconds of vigorous exercise when people do not warm-up. Therefore, it would be a smart idea to use a warm-up period to progressively go from a low to high level of physical activity. The warm-up period also helps decrease the problem of soreness that is often experienced the first couple of weeks of exercising.<br><br>A warm-up period has not been shown to prevent muscle or joint injuries or improve physical performance; however, it is important for acquiring and maintaining flexibility. Flexibility helps reduce susceptibility to sprains, strains, and muscular pulls. Some endurance activities can actually reduce the flexibility of an active individual. Therefore, everyone should take a few minutes, 5 to 15 minutes, to properly warm-up. The amount of warm-up and the specific stretching exercise used depends upon what the individual needs and what they want to accomplish. Handouts #30, 31, and 32, EXERCISE SUPERCOURSE, give examples of exercises which can be included in the warm-up and cool-down period of any exercise program. The number of repetitions for each exercise varies and depends upon the fitness and flexibility of the individual. | 2. Handouts #30, 31, and 32 EXERCISE SUPERCOURSE |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | The cool-down period is important to help return blood to the heart after continuous exercise. During the exercise blood is transported away from the heart muscle to the active muscles in your arms and legs. When the activity is over, the blood needs to be brought back to the heart and recirculated to prevent the blood from pooling in the arms and legs and causing dizziness, nausea or fainting.<br>  <br>A cool-down period is an important transition from a high to a low level of physical activity. Cool-down exercises can be accomplished by a modified continuation of the endurance exercise. This means walking after jogging and running, or pedaling and swimming at a slower rate until your pulse rate is close to the level it was when you started to exercise. Stretching exercises can also be included as part of a cool-down period. They can be important for preventing or reducing muscle or joint soreness. Exercises in Handouts #30, 31, and 32, EXERCISE SUPERCOURSE, can be used to cool-down. But be careful! Do these exercises fairly close to one another and in succession. This will prevent you from cooling-down too rapidly. Too rapid of a cool-down can cause you to become chilled. | |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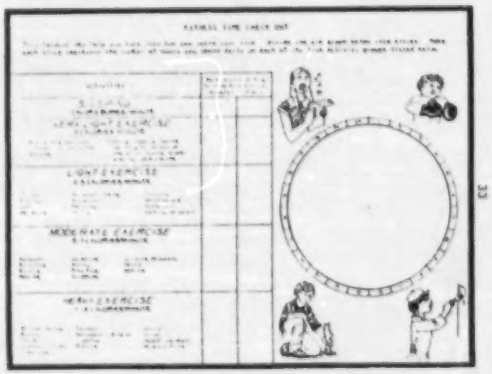
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 3. Handout #33 - FITNESS TIME CHECK OUT<br>  | <br>An exercise program may become boring if it's made up totally of aerobic conditioning activities. Once a desirable level of cardiovascular fitness has been reached, a variety of other forms of exercise like tennis, racketball, walking, volleyball, or handball will keep exercise fun and will help maintain fitness.<br> | 3. Handout #33 FITNESS TIME CHECK OUT |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | Athletes want to be winners. They want to perform at their best. In their quest for perfection, some athletes will try magic diets or "miracle" products in hope that they will give them a competitive advantage. Protein supplements, lecithin, honey, dextrose tablets, and megadoses of vitamins and minerals are examples of magical tonics that have been tried. Special diets which promote or eliminate specific foods are also tried by athletes and often are recommended by well intended coaches. Milk, for example, is often avoided because of the false belief it will cause stomach upset and interfere with performance. Faith in these unsound and faddish nutrition practices have not been proven to be beneficial. Some may even be dangerous! The key to *super* athletic performance is not from any wonder product or miracle diet, but from hard training, sound nutritional habits, plenty of rest, and a winning attitude!<br><br>See Handouts #20, VEGETARIAN FITNESS-FOOD GUIDE, #21, FITNESS-FOOD GUIDE, and #24, EATING ON TARGET, which are designed to allow the student to make wise food choices. Lesson III, Classes 1 and 2, provide the background information on these handouts. | |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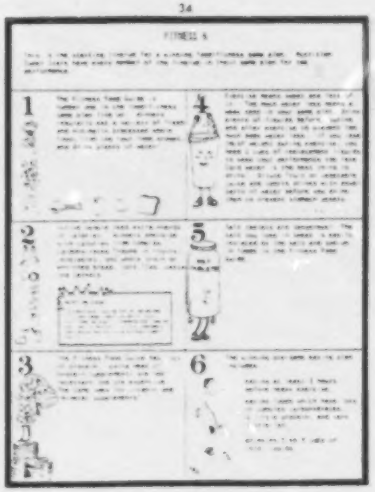
## LEARNING ACTIVITIES

4. Handout #34 - FITNESS 6



5. Handout #35 - HIT OR MYTH

## INFORMATION

Sound nutritional principles are very simple and straightforward. They remain the same for those in competitive athletics as well as for those physically active for fun, fitness, and good health.

Good nutrition starts with a diet which adequately supplies calories, protein, carbohydrates, fat, vitamins, minerals, and water in satisfactory amounts and proportions. Shortages or excesses of any one of these nutrients in the diet will eventually cause a decline in physical performance. Meeting the body's needs for these nutrients can be accomplished by eating a variety of foods and drinking plenty of fluid. No one food or small group of food or supplement supplies all the needed nutrients, therefore, food should be selected from each of the basic food groups.

Calories

As a general guide, food intake should provide enough calories (energy) for your basal metabolic rate, activity, and to maintain ideal body weight. An appropriate weight is necessary for optimal physical performance. Physical activity will influence calorie requirements. The extent of this influence is dependent upon the type, intensity, and duration of the exercise.

In most cases, appetite insures calorie intake will be adequate to meet the body's energy needs. For individuals participating in strenuous type exercise, for example,

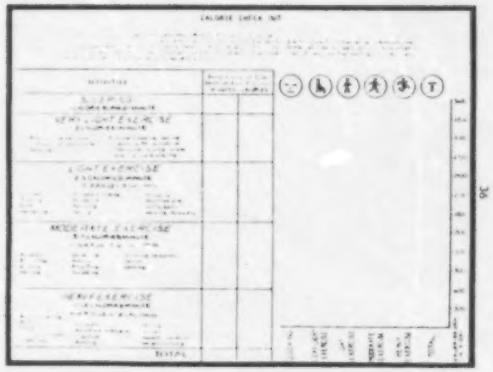
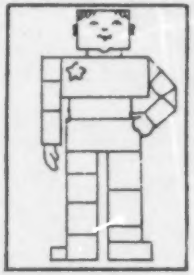
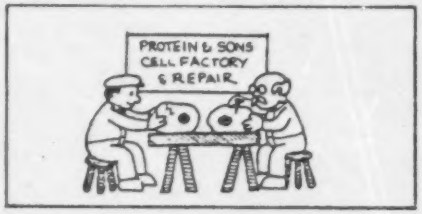
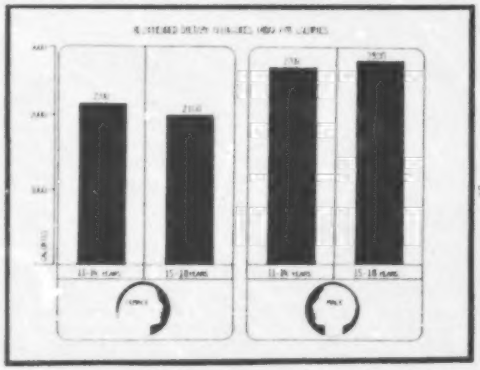
## AIDS

4. Handout #34 FITNESS 6

Filmstrip/ Cassette: NUTRITION AND EXERCISE

Film: NUTRITION: FUELING THE HUMAN MACHINE

5. Handout #35 HIT OR MYTH

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 6. Handout #36 - CALORIE CHECK OUT<br>  | appetite is increased to meet the increased energy demand. For moderate levels of physical activity, however, appetite can actually decrease and calorie intake can be better controlled. This can be very beneficial for people interested in losing weight. Drastic calorie restriction for quick weight loss is not advised. This is especially true for children who need enough calories and nutrients for growth.<br>  <br>Protein<br>Protein is the only nutrient which can be used for building and repairing body tissue. Only as a last resort is protein used as a fuel or energy source.<br>  <br><br>Athletes often overdo the amount of protein in their diet thinking extra protein is needed for strong and powerful muscles. This is not true. Excessive amounts of protein are not necessary even with heavy exercise and do not enhance physical performance. If anything, eating more protein than your body needs will force the liver and kidneys to work harder in order to eliminate protein breakdown products like nitrogen. This leads to frequent urination and possible dehydration. Amino acid | 6. Handout #36 CALORIE CHECK OUT |
| Handout #37 - RECOMMENDED DIETARY ALLOWANCES (RDA) FOR CALORIES<br>  | | Handout #37 RECOMMENDED DIETARY ALLOWANCES (RDA) FOR CALORIES |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| LEARNING ACTIVITIES | INFORMATION | AIDS |
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| | or protein supplements also have no advantage and may have many adverse nutritional effects.<br><br>Most Americans generally eat far more protein than they actually need. Protein needs can be met from a nutritionally balanced diet which supplies approximately 15% to 20% of the calories from high quality protein food sources like meat, fish, poultry, milk, cheese, eggs, and a combination of nuts, whole grains, and beans.<br><br> <br><br>Carbohydrates<br><br>The body's main fuel for physical activity is a combination of carbohydrates and fat. Most nutritionists agree that carbohydrates should supply 50% to 55% of the total daily food calories. Carbohydrate in the diet should increase to 70% of total calories with more strenuous exhaustive training and endurance events. This carbohydrate should preferably come from complex carbohydrates found in vegetables, fruits, breads, and cereals. Simple carbohydrates such as refined sugars and honey are found in foods like candy bars and soft drinks. These are low nutrient density foods and should be eaten in moderation. These foods supply calories but no other nutrients that your body needs to properly use these calories. The best sources of carbohydrates are found in high nutrient density foods like fruits, vegetables, and whole grain or enriched breads, tortillas, pasta, rice, and cereals. These foods provide calories as well as vitamins, minerals, and small amounts of protein. | |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
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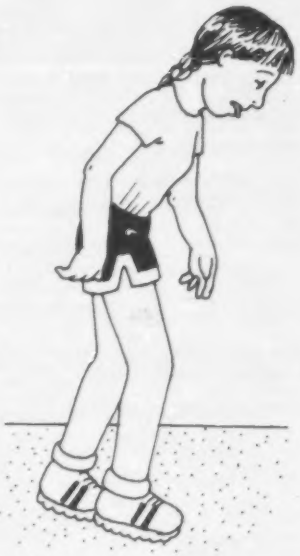
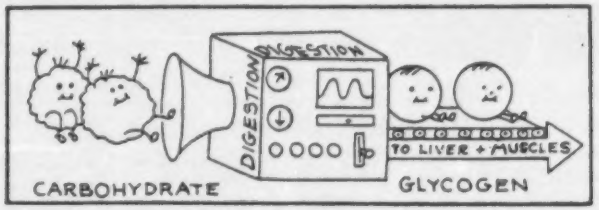
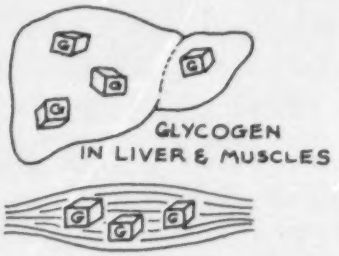





After carbohydrates are digested, they are stored in limited amounts in the liver and muscles as *glycogen*.




This carbohydrate energy reserve becomes the main fuel for anaerobic activities like running up stairs, the 50 and 100 yard dash or the long jump. For light to moderate aerobic exercise like running, jogging, bicycle riding or swimming, glycogen supplies about 40% to 50% of the energy needed. This percent decreases as the exercise is continued for a prolonged period of time. Fat supplies the remaining 60% to 50% of the energy your body needs to fuel these activities.

When the body's glycogen stores are all used up, the muscles fail to contract and the body becomes fatigued. *This occurs even with an unlimited supply of energy from fat stores and an adequate supply of oxygen to the muscle!* Therefore, the greater the amount of stored glycogen, the greater the body's ability to perform for longer time periods. This is the theory behind carbohydrate loading.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| LEARNING ACTIVITIES | INFORMATION | AIDS |
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| 7. Have students prepare articles for their school newspaper on sound nutritional practices for athletes. | Carbohydrate Loading<br><br>Carbohydrate loading can increase the glycogen stores in muscles. This technique may be beneficial for improving performance in endurance events of 60 minutes or more. With activities of less time, carbohydrate loading has *no* advantage. This method for increasing muscle glycogen starts with a total depletion of stored carbohydrate -- glycogen -- 7 to 8 days before an event. This is done via a high intensity workout of an hour or more. This glycogen depletion is followed by a low carbohydrate diet and a low activity level for 3 to 4 days. The next 3 to 4 days are made up of a high carbohydrate diet and little or no activity. Skipping the low carbohydrate segment of this special diet regimen makes it easier to follow and does not seem to effect the overall benefit of carbohydrate loading. CAUTION! Carbohydrate loading has been associated with adverse side effects like chest pain and heavy, stiff muscles. Therefore, this diet manipulation should not be attempted without expert advice and guidance. | |

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| | HIGH INTENSITY WORKOUT | | | | | |
| LOW CARBOHYDRATE DIET | | | HIGH CARBOHYDRATE DIET | | | |

Fat

Fat is the other major energy supplying nutrient. It provides about 50% to 60% or over half of the fuel during aerobic activity. This percent increases to as much as 70% during the later stages of an endurance event. The remaining 30% of needed energy or calories is supplied from carbohydrates from the body's glycogen stores.

| LEARNING ACTIVITIES | INFORMATION | AIDS |
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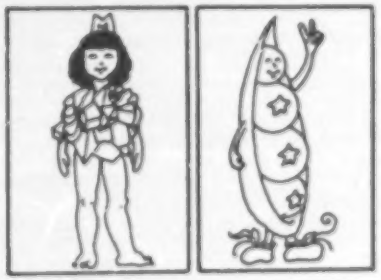
| | With constant training, the body develops the ability to burn a greater percent of fat during all stages of exercise. This spares glycogen or carbohydrate stores and allows the body to perform more efficiently for longer periods of time.<br><br>Most nutritionists recommend that 30% to 35% of your calories from the foods we eat should come from fat. These percentages can be reduced even more and replaced by complex carbohydrate, as the calorie requirement increases with high exhaustive levels of activity and training.<br><br>  <br><br><u>Vitamins and Minerals</u><br><br>Vitamins and minerals are needed regularly for health and fitness. A carefully selected diet consisting of a variety of food can usually supply all that is needed. Some studies have shown that supplementation of B-complex vitamins and Vitamins C and E, may make small improvements in physical performance. More studies are really needed to prove this. It is safe to say, however, that megadoses or large doses of vitamin or mineral supplements are *not* necessary, they are expensive, and can be toxic and even fatal. | |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| LEARNING ACTIVITIES | INFORMATION | AIDS |
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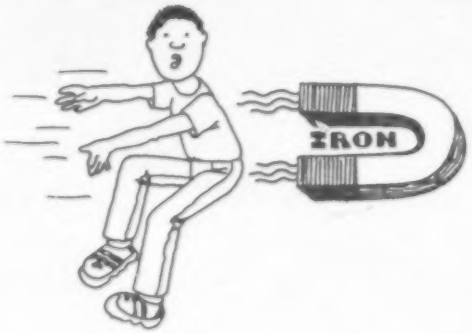
| | Minerals like the electrolytes sodium and potassium, are lost with sweat. Adequate fluid intake and a diet which meets the Basic Food Group guidelines will usually contain enough of these two other minerals to replace what was lost. Salt tables are *not* needed. They are also not recommended because they are known to cause adverse effects like gastrointestinal disturbances and muscle dehydration.<br><br>  <br><br>Iron supplementation has often been recommended for athletes because of the occurrence of "athlete's anemia". Endurance - trained athletes have increased plasma volume in comparison to their red blood cells and hemoglobin. As a result, on a blood test they appear to be anemic. This physiological adaptation to training is unresponsive to iron supplementation. It is therefore not recommended that iron supplements be taken since they can cause | |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
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nausea, gastric upset, constipation and for genetically predisposed individuals, iron accumulation in the tissues. An exception to this may be for women, where iron supplement in a multivitamin may insure an adequate intake of this mineral.

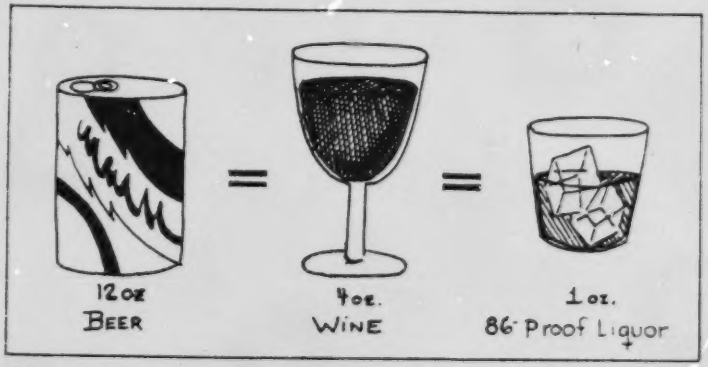
Water

Water is the most important nutritional concern of any athlete. It is vital for maintaining body temperature as well as being a medium for digestion, metabolism, nutrient transport, and waste disposal. Water should be replaced before, during, and after any activity. Replacement is recommended at one pint per pound of body weight loss during exercise. Weighing before and after exercising can help you determine the amount of fluid replacement needed.

Commercial sports drinks, like Gatorade, are not required for water or mineral replacement. The simplest way to replace these needed nutrients is with water. Fruit juice diluted with equal parts of water or fresh fruit can also help. If commercial sport drinks are used, they should also be diluted. Drinks containing too high a concentration of sugar or minerals can draw fluid into the stomach and intestines which can cause muscles to dehydrate. Dehydrated muscle causes a decrease in muscle endurance.

FITNESS FLASH

Drying out young athletes is often a practice used to qualify wrestlers in a weight class below their natural weight. This is a very dangerous practice because of dehydration and the risk of developing kidney problems. Keeping an athlete properly hydrated is mandatory especially in warm or hot weather conditions.

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | Alcohol<br><br>The average American over 14 years of age drinks about 2.6 gallons of pure alcohol a year. This would be equal to 666 drinks!<br><br>A drink is equal to a half ounce of pure alcohol which is the amount of alcohol in one 12 ounce can of beer, 4 ounces of wine or one ounce of 86 proof liquor. There has been a 30% increase in alcohol consumption over the past 15 years. In a 1975 study, more than half of all 7th graders nationwide said they had tried alcohol at least once during 6th grade. For 12 to 17 year olds, 80% reported having had a drink, greater than half of them drank once a month and 3% drank daily.<br><br>  <br><br><br>Drinking large amounts of alcohol can be harmful to every organ in your body. Cirrhosis of the liver and cancer of the liver, mouth and esophagus are associated with excess alcohol intake. Alcohol misuse is also a factor in more than 10% of all the deaths in the United States and is associated with half of all traffic deaths. | |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
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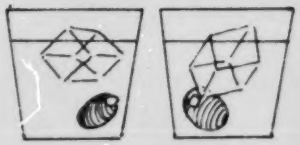
|  | Some studies have shown moderate intakes of alcohol -- 2 to 4 drinks per day -- may be helpful in reducing the risk of heart disease. This may be a result of an increased level of high density lipoprotein (HDL), a form of cholesterol in the blood of people who drink moderately. HDL or high density lipoprotein, seems to have the ability to carry fat to your liver where it can be changed to energy which your body can use. This helps to prevent fat build up and clogging of your arteries which can lead to heart disease.<br><br>The Dietary Guidelines for Americans suggest that if you choose to drink alcohol, do so in moderation (no more than 2 drinks a day). Excessive regular intakes of alcohol can be very harmful!<br><br>Alcohol should be avoided prior to vigorous exercise. It can be a depressant, impairs judgment (2 drinks), slows down reaction time (4 drinks) and impairs muscle coordination (6 drinks). Alcohol can also lead to an increased excretion of water resulting in dehydration.<br><br>The Dietary Guidelines have other sensible recommendations for improving an athlete's diet. It's a smart idea for all coaches, P.E. teachers, and athletes to become familiar with them. | |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| LEARNING ACTIVITIES | INFORMATION | AIDS |
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| | Pre-Game Meal<br><br>Digestion requires 3 to 4 hours and muscle glycogen formation in the liver and muscles takes at least 46 hours. So, what is eaten before any physical activity is not used to fuel that activity. Most exercise fuel comes from nutrients in foods eaten about 2 days before the exercise. However, what is eaten for the pre-game meal is important!<br><br>Gastrointestinal upsets are minimized if the stomach is essentially empty when heavy exercise begins. Since it takes about 3 hours for the stomach to empty, the meal you eat before exercising should mainly be easily digestible carbohydrate and just enough fat for a feeling of satisfaction. A meal high in protein and fat could cause indigestion, especially if you are tense before competition or heavy exercise. Aim for a meal which has about 500 calories. Be sure to include plenty of fluids to start preventing dehydration. Some good pre-game meals might include tortillas, pasta products like spaghetti with meat sauce, cereals, pancakes, and toast. Combine these with fruits, fruit juices, and vegetables. Try to avoid gas forming foods.<br><br>For people who like to "drink" their pre-game meal, there are commercial liquid meals on the market or you may want to make your own. Although some people may feel that liquid meals help them perform better, no evidence shows that liquid meals actually promote better performance than solid meals.<br><br> | |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
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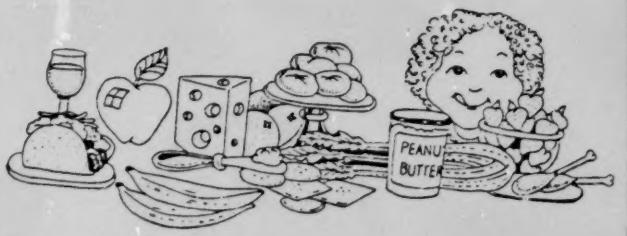
| HOMEMADE PRE-GAME MEAL<br><br>One half cup nonfat dry milk<br>3 cups skim milk<br>One half cup water<br>One quarter cup sugar<br>One teaspoon vanilla flavoring<br><br>Makes one quart.<br><br>OR<br><br>One cup orange or grapefruit juice<br>1 teaspoon powdered yeast<br>2 teaspoons fortified powdered milk<br>One egg<br><br>Blend for 20 seconds.<br>Makes one quart.<br><br>  <br> | The addition of 2 to 3 cups of cold fluid during the pre-game meal is helpful to insure adequate hydration. For early morning events or for individuals tense before competition, a liquid pre-game meal consisting of nutrients in recommended proportions may be a good idea (see recipe).<br><br>Caffeine<br><br>Avoiding caffeine containing beverages has also been suggested since caffeine acts like a mild diuretic causing the water loss. However, studies on animals and humans have shown that 2 cups of coffee taken 30 to 60 minutes before an event spares glycogen use by increasing fat utilization. This would increase the individuals' capacity for prolonged endurance exercise which lasts about two hours.<br><br>Nutrition is important for physical fitness. Both are important for overall good health. The right amount of exercise and adequate nutrition depends upon an individual's choices. However, it is possible for everyone to improve and maintain maximum physical performance safely and effectively with wise nutritional habits in combination with a regular exercise program. Good nutrition is basic to fitness and sports!<br><br> | |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LESSON V — FUELING A "SUPER STAR"
*Concept: Application of nutrition and fitness knowledge when making food and activity choices*

Objectives . . . . . 89

Class 9 - Handout Topics . . . . . 91

*Food Safety Scramble*
*Save the Nutrients*

Class 10 - Handout Topics . . . . . 97

*Safety in the Bag*
*Food Safety Puzzle*
*Nutrition in the Bag*
*Vending Machine Quick Bites*

NUTRITION Super Stars

**LESSON** V - FUELING A "SUPER STAR"

**CONCEPT** *Application of nutrition and fitness knowledge when making food and activity choices.*

**CLASSES** 9 and 10

## OBJECTIVES

1. Identify that safe food buying, storage, preparation, and transport methods help prevent food borne illness or food poisoning.
2. Identify that washing hands and food preparation utensils before handling food help prevent food borne illness or food poisoning.
3. Identify that bacteria rapidly grow in the temperature range between 140°F to 40°F called the danger zone.
4. Identify that keeping foods out of the danger zone (above 140°F (60°C) and below 40°F (4°C) help prevent bacteria growth which can cause food borne illness or food poisoning.

## INSTRUCTIONAL AIDS

| CLASS NUMBER | AIDS |
|---|---|
| 9 | Handout #38 - FOOD SAFETY SCRAMBLE |
| | Handout #39 - SAVE THE NUTRIENTS |
| 10 | Handout #40 - SAFETY IN THE BAG |
| | Handout #41 - FOOD SAFETY PUZZLE |
| | Handout #42 - NUTRITION IN THE BAG |
| | Handout #43 - VENDING MACHINE QUICK BITES |

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| OBJECTIVES | INSTRUCTIONAL AIDS |
|---|---|
| 5. Identify that food buying, storage, and preparation methods help conserve the nutrient content of foods.<br>6. Apply food safety rules to help prevent food-borne illness.<br>7. Identify that high nutrient-density foods provide more nutrients for your money and calorie budgets.<br>8. Identify high nutrient-density foods in vending machines. | CLASS NUMBER — AIDS |

NUTRITION Super Stars

**LESSON** V

**CLASS** 9

**OBJECTIVES** 1, 2, 5

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 1. Handout #38 - FOOD SAFETY SCRAMBLE | Good sanitation practices start even before you buy food at the store. Foods from animals and plants are handled by many people before they ever reach a grocery cart. Laws have been written and agencies funded at the federal, state and local levels to help protect the consumer from unsafe foods. The federal agencies concerned with the safety of the food supply are the Food Safety and Quality Service (FSQS) of the United States Department of Agriculture (USDA) and the Food and Drug Administration (FDA). The Meat and Poultry Inspection Staff of FSQS enforces laws to help protect consumers from unwholesome meat and poultry. They inspect the slaughtering and processing of all livestock and poultry commercially via interstate commerce in the United States. The purpose of their inspection is to help make sure these products are wholesome and safe to eat when they reach the store. | 1. Handout #38 FOOD SAFETY SCRAMBLE |

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| LEARNING ACTIVITIES | INFORMATION | AIDS |
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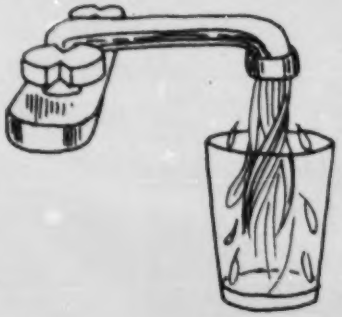
|  | The Federal Food, Drug and Cosmetic Act gives the FDA the authority to conduct a number of activities to promote food safety. This law applies only to food in interstate commerce, that is, food prepared by companies which ship at least some of their products over state lines.<br><br>The Safe Drinking Water Act, administered by the Environmental Protection Agency (EPA), helps safeguard public drinking water. The EPA establishes minimum drinking water standards and sets maximum levels for contaminants that may be present in drinking water.<br><br> <br>PASTEURIZATION<br><br>Health departments on state and local levels establish sanitation codes and other food safety regulations for food processing plants, markets, and food service establishments like restaurants. All states have strict rules to assure the safety of dairy products. Dairy products sold in the U.S. are either pasteurized or certified. Pasteurization is a heat treatment which kills harmful bacteria. Milk that is certified comes from herds of cows which are carefully inspected to rule out any contamination by a diseased animal. Certified milk is raw milk. It does not go through the pasteurization process. All raw milk is not certified. Check to be sure that milk is certified or pasteurized before you drink it! | |

| LEARNING ACTIVITIES | INFORMATION | AiDS |
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| | <br>When purchasing food in a grocery store, always check the expiration dates on food containers and packages, especially those on milk, cheese and meat. Never buy any canned goods which are dented or bulging. Bulging cans are a sign that harmful bacteria may be present in the food. Improperly prepared canned foods, especially home canned low-acid foods like green beans and mushrooms, are an ideal place for growth of anaerobic bacteria like Clostridium Botulinum to grow (see *Class 1, Lesson II* for more information on how to identify and prevent growth of bacteria which can cause food borne illness.)<br><br>When buying produce, always pick fruits and vegetables which are free of bruises and blemishes. Be sure the surface of the produce is smooth, not wrinkled. Wrinkled surfaces are a sign of nutrient loss and food decomposition.<br> <br>A number of factors affect the stability of nutrients found in food. These include enzymes, heat and exposure to air. | |


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| LEARNING ACTIVITIES | INFORMATION | AIDS |
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| | Enzymes<br><br>Enzymes are protein substances which speed up chemical reactions. At warm temperatures some enzymes which are present in uncooked foods can increase the rate at which certain vitamins are changed chemically and destroyed. These enzymes are activated when cell walls of fruits and vegetables are destroyed. This process can be slowed down by using a sharp knife when cutting up produce.<br><br> <br><br>Heat<br><br>Heat speeds up chemical reactions and causes vitamin destruction if other conditions are favorable. Vitamin C, thiamin and folacin are easily destroyed by heat. Keep vitamin loss at a minimum by cutting down cooking times and eating fruits and vegetables raw.<br><br>Air<br><br>Several vitamins are inactivated when exposed to air due to a chemical process called oxidation. Among these are Vitamins A, C, and E. Oxidation can be reduced by limiting the exposure of food to the air. Grating, whipping or mashing fruits and vegetables all increase oxidation.<br><br>Proper food storage and preparation methods are important to keep nutrient loss in foods at a minimum. Store perishable items at the recommended temperature, generally in the refrigerator or freezer. Store foods, except fresh meats, in air-proof containers or wrap them in materials which keep out moisture and odors. Package | |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
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| | green vegetables so they will stay crisp. Keep them slightly moist, not wet. Lettuce which has been washed and dried keeps well if it's wrapped loosely in a clean towel and put in a plastic bag in the refrigerator. Items which are less perishable like pasta, dry cereals, flour, masa or canned goods should be stored in a cool dry place away from light. Foods on the shelf or in the refrigerator should be used as quickly as possible. Excessive storage time can lower the vitamin content of food.<br><br>THE GREAT VITAMIN ESCAPE<br> <br><br>To conserve nutrients during food preparation, follow these suggestions. Using a very sharp knife, prepare fresh produce as close to time of use as possible. Do not soak cut-up fruits and vegetables, especially if they are a source of any water-soluble nutrients like Vitamin C or the B vitamins. When possible, leave vegetables whole instead of cutting them up and scrub their skins rather than paring them. If practical, peel vegetables like beets and potatoes after cooking. Save nutrients, time, and energy by eating raw fruits and vegetables often. | |


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| LEARNING ACTIVITIES | INFORMATION | AIDS |
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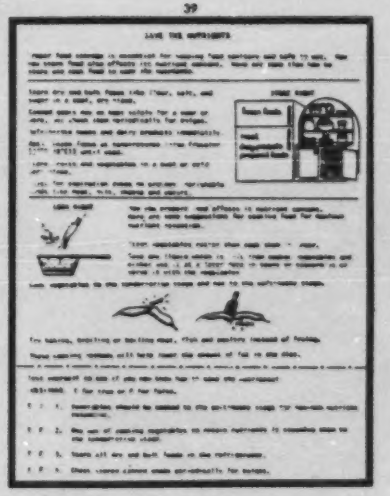
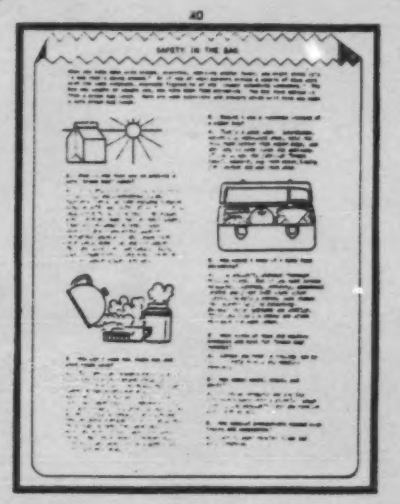
| 2. Handout #39 - SAVE THE NUTRIENTS  | To conserve nutrients during cooking, steam vegetables to the tender-crisp stage. With this cooking method, a minimum amount of moisture is used in the form of steam and cooking time is reduced by cooking only to the tender-crisp stage. Heat a small amount of water to boiling in a pan. Suspend vegetables in a container or mesh basket over the water. Do not put vegetables in the water. Cover the pan. Cook to the tender-crisp stage. Few nutrients are lost or destroyed by using this method.<br><br>Other nutrient-retaining cooking methods are microwave and stir-fry. Heat canned vegetables in their own liquid. Use cooking liquids from the vegetables to make sauces, gravies or soup stock. Cooking liquids from canned vegetables contain water-soluble vitamins which are leeched out in the canning process.<br><br>Remember, correct food storage and preparation will help preserve the nutrients which are needed for good health! | 2. Handout #39 SAVE THE NUTRIENTS |

NUTRITION Super Stars

**LESSON** V

**CLASS** 10

**OBJECTIVES** 1-8

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 1. Handout #40 - SAFETY IN THE BAG  | It is important to keep food safety and sanitation in mind when preparing and packing foods which will be used several hours later. This is especially true for picnics or brown bag lunches. Always cook meat and poultry products thoroughly and refrigerate immediately after cooking. Always wash fruits and vegetables thoroughly before using, even if they will be peeled. Use running water or several changes of water. Washing fruits and vegetables removes pesticides, wax and dirt. Keep salads, sandwiches and desserts cold especially if they are made with milk based dressing, milk or eggs. Harmful bacteria like Salmonella, Staphlococcus Aureus, Clostridium Perfringens and Clostridium Botulinum which can cause food poisoning grow most rapidly between 40°F (4°C) and 140°F (60°C). It is important to keep cold foods at temperatures below 40°F (4°C) and hot foods at temperatures above 140°F (60°C). Temperatures outside | 1. Handout #40 SAFETY IN THE BAG |



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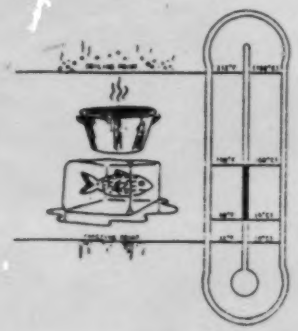
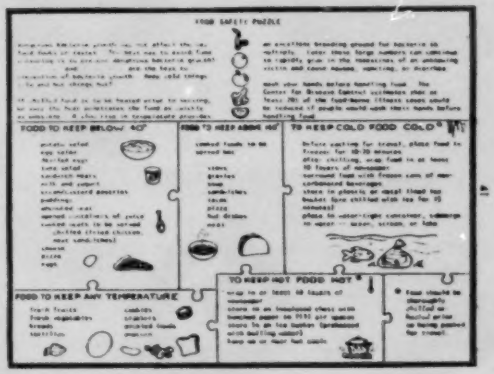
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | the "danger zone" (40°F [4°C] to 140°F [60°C] do not promote the growth of these harmful bacteria. If food looks or smells bad, don't use it! When in doubt, throw it out!!  | |
| 2. Handout #41 - FOOD SAFETY PUZZLE  | Always take a few simple safety precautions when preparing foods. Be sure that hands have been well scrubbed with soap and hot water and that all utensils like knives, cutting boards and work surfaces are absolutely clean. If the cook has any open cuts, sores, boils or rashes, those areas can contain staphlococcus bacteria and must not come in contact with food. The affected areas should be washed thoroughly and then covered with a clean bandage. Avoid mixing foods with your hands; use clean utensils instead. Do not use the same spoon more than once for tasting food which is being prepared. Do not sneeze or cough near food, dishes or utensils. If the cook is sick, have another person prepare the food.<br><br>The types of packaging and containers used for storage of picnic and brown bag lunch foods make a big difference in food safety and sanitation. Always use air-tight containers to protect foods from insects, dirt and dust particles. Pack any perishable foods in a well-insulated cooler with ice. If the excursion will take all day, it might be necessary to add ice to the cooler at least | 2. Handout #41 FOOD SAFETY PUZZLE |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
| --- | --- | --- |
| | once. Use block ice in the cooler. It lasts longer than cubes. Rather than buying ice, fill some plastic containers with water and freeze them for take-along refrigeration. Use insulated vacuum bottles to store any hot or cold foods. When storing hot food, prepare the vacuum bottle by rinsing it with boiling water before using. Bring any hot liquid to the boiling point (212°F or 100°C) before pouring it into the vacuum bottle. To pack a cold liquid, first chill the clean vacuum bottle and then pour in the chilled liquid. Save plastic food containers and small jars for packing foods like salads.<br> <br>It is important to remember that storage containers, serving dishes and utensils should be clean and sanitary. This is true whether food is served at home, on a picnic, at school or at the office. Always handle glasses by the base, dishes by the edges and silverware by the handles. Keep hands and fingers out of the food. Do not use cracked dishes and glasses. Food particles can collect in the cracks and are great places for bacterial growth.<br> | |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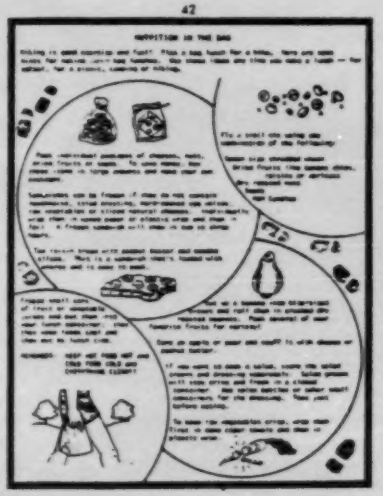
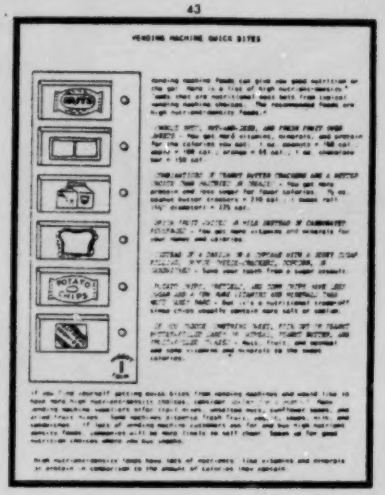
| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| | Always scrape all dishes thoroughly after use so leftover food won't contaminate the dishwater. Wash dishes in hot soapy water and rinse in clear hot water. Be sure to change the dishwater when it gets dirty. Air-drying is a sanitary way to dry dishes. Towels can spread germs. If you use towels, be sure they are clean. Always store clean dishes, pots and pans, and utensils in a clean closed place away from insects, rodents, or poison contamination. When using an automatic dishwasher stack the dishes so water can circulate to all surfaces. The rinse water should reach at least 150°F (50°C) so that any germs remaining on the dishes will be killed.<br><br>The food service personnel at your school cafeteria or lunch room take these and other precautions to provide students and teachers with a safe, wholesome, and nutritious school lunch or breakfast. |  |
| 3. Handout #42 - NUTRITION IN THE BAG<br>  | By following these simple rules, eating at home or on the "go" can be fun and safe!<br> | 3. Handout #42 NUTRITION IN THE BAG |

| LEARNING ACTIVITIES | INFORMATION | AIDS |
|---|---|---|
| 4. Handout #43 - VENDING MACHINE QUICK BITES<br><br>  <br>43<br>VENDING MACHINE QUICK BITES | Eating on the run is part of the American eating style. Foods from vending machines are snacks and meals for millions of Americans. Most vending machine foods are prepared foods which will not easily spoil. Since these foods do not easily spoil because they don't promote bacterial growth, they also help prevent food poisoning. These low spoilage food choices also help cut down on food waste for vending machine operators.<br><br>Choosing high nutrient-density foods from vending machines means you get the most nutrients for your money! Not only do you get more nutrients for your money, you also get more nutrients for your calories. So, you do both your body and your budget a favor by eating these nutrient-rich foods.<br><br>*High nutrient-density foods contain lots of nutrients like vitamins and minerals in proportion to the calories they contain.*<br><br>The guidelines in Handout #43, VENDING MACHINE QUICK BITES, give practical suggestions on how to pick out a variety of high nutrient-density foods.<br><br> | 4. Handout #43 VENDING MACHINE QUICK BITES |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STUDENT HANDOUT MASTER LIST

## STUDENT HANDOUT MASTER LIST

| STUDENT HANDOUT NUMBER | TITLE |
|---|---|
| 1 | Nutra-Fit Check Out |
| 2 | What is a Nutrition Super Star? |
| 3 | Skin Prints |
| 4 | Cell Fires |
| 5 | Body Temperatures |
| 6 | Nutrition Search II |
| 7 | Fiber - The Unrefined Character |
| 8 | Wanted: Dead Not Alive (page 1) |
| 9 | Wanted: Dead Not Alive (page 2) |
| 10 | Showdown at the Careless Kitchen |
| 11 | Danger Zone! |
| 12 | Bacteria Round-up |
| 13 | Food Poisoning on Trial (page 1) |
| 14 | Food Poisoning on Trial (page 2) |
| 15 | The Tale of Tom E. Ache |
| 16 | Food Safety Detective |
| 17 | Food-Fitness Value Shapers |
| 18 | Vegetarianism |
| 19 | Vegetarian Diet Styles |
| 20 | Vegetarian Fitness-Food Guide |
| 21 | Fitness-Food Guide |
| 22 | Protein Partners |

| STUDENT HANDOUT NUMBER | TITLE |
|---|---|
| 23 | Sprouts |
| 24 | Eating on Target |
| 25 | Fitness-Food Guide Countdown |
| 26 | The Body Shop |
| 27 | Measure Up |
| 28 | Pulse Rate Check Out |
| 29 | Nutrition Super Stars Fitness Plan |
| 30 | Exercise Supercourse (page 1) |
| 31 | Exercise Supercourse (page 2) |
| 32 | Exercise Supercourse (page 3) |
| 33 | Fitness Time Check Out |
| 34 | Fitness 6 |
| 35 | Nutrition-Fitness Hit or Myth |
| 36 | Calorie Check Out |
| 37 | Recommended Dietary Allowances (RDA) for Calories |
| 38 | Food Safety Scramble |
| 39 | Save the Nutrients |
| 40 | Safety in the Bag |
| 41 | Food Safety Puzzle |
| 42 | Nutrition in the Bag |
| 43 | Vending Machine Quick Bites |

# NUTRA-FIT CHECK OUT

Good health means feeling fine, looking your best, having eating and activity habits which help you live well! There are health risks you have little control over - like your genetic inheritance, for example. You can control health risks in your lifestyle like your eating and exercise habits. Use this handout to check out the health risks in your lifestyle.

Complete the two parts of the test. Circle the number of the answer which best describes what you do. Then add the numbers circled to get your score for each part.

| PART I<br>*EATING HABITS/NUTRITION* | Almost Always | Sometimes | Almost Never |
|---|---|---|---|
| 1. I usually eat a variety of foods each day. I eat fruits and vegetables, whole grain breads and cereals, milk and other dairy products, lean meats or dry peas, beans, nuts, and seeds. | 4 | 1 | 0 |
| 2. I limit the amount of fatty and greasy foods I eat (not too much butter, margarine, fried foods, fatty meats). | 2 | 1 | 0 |
| 3. I limit the salt or sodium I eat by not adding salt to my food and avoiding salty snacks. | 2 | 1 | 0 |
| 4. I limit the sweets I eat (not too many candy bars, sticky candy, soft drinks, cakes, pies, cookies). | 2 | 1 | 0 |
| 5. I use food label information to learn about packaged foods I eat. | 2 | 1 | 0 |
| 6. I follow food safety rules to prevent food poisoning. | 3 | 1 | 0 |
| 7. I drink enough water and fluid to keep my urine light yellow. | 3 | 1 | 0 |
| 8. I eat 3 or more smaller meals rather than one or two large meals a day. | 3 | 1 | 0 |
| 9. I avoid taking large doses of vitamin and/or mineral supplements. | 2 | 1 | 0 |
| 10. I eat some fresh fruits and vegetables almost everyday. | 2 | 1 | 0 |
| SCORE | | | |

| PART II<br>*EXERCISE/FITNESS* | Almost Always | Sometimes | Almost Never |
|---|---|---|---|
| 1. I stay about the right weight avoiding overweight and underweight. | 3 | 1 | 0 |
| 2. I exercise hard for 15-30 minutes at least 3 times a week (bicycling, dancing, running, playing ball, swimming, or walking fast). | 3 | 1 | 0 |
| 3. I warm-up before doing hard exercise and cool-down afterwards. | 3 | 1 | 0 |
| 4. I walk, bicycle, and take the stairs instead of riding whenever I can. | 2 | 1 | 0 |
| 5. I use part of my free time to play or work outside instead of watching TV. | 2 | 1 | 0 |
| 6. I brush and floss my teeth after eating. | 3 | 1 | 0 |
| 7. I take time to relax everyday. | 3 | 1 | 0 |
| 8. I use my pulse rate to help check my heart's fitness level. | 2 | 1 | 0 |
| 9. I wear proper shoes and clothing when I exercise. | 2 | 1 | 0 |
| 10. I usually sleep well 6 to 8 hours a night. | 2 | 1 | 0 |
| SCORE | | | |

Each part of this test covers one area of your lifestyle - the score for each part tells whether you need to improve in that area to be healthier and reduce the risk of illness. *The high score for each part is 25.* If you are not happy with your scores, take action!

How does your score for each part of your Nutra-Fit Check-Out measure up?

22-25 Great! You are aware of the importance of this area to your health and are putting that awareness to work.

15-21 Good, but room for improvement. Look again at items answered "Sometimes" or "Almost Never". Are there changes you can make?

8-14 Your health risks are showing! A better understanding of the healthy risks you're facing may help you make some important changes.

0-7 You took the test and that is a positive step. You may be taking serious and unnecessary risks with your health.

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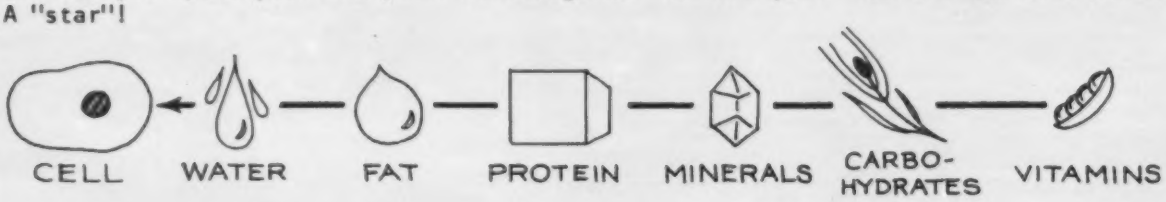
## WHAT IS A NUTRITION SUPER STAR?

Everybody is *alike*...everybody is *different*. How can both be true?

Everybody is *alike* because our bodies are made of the same raw materials. Everybody's body is made of about 100 trillion smaller parts called *cells*. Cells are formed from nutrients in food. Protein, carbohydrate, fats, vitamins, minerals and water are the major nutrients found in the food we eat.

Everybody is *different* because we each inherit a unique set of genetic characteristics from our parents. Your genetic inheritance, plus what you eat, your exercise and how you spend your time, all work together to form you. You are one of a kind! A "star"!



A lot of people seem to think that smarts or intelligence is a score you get from taking tests at school. However, tests only show a little bit of the unique and complex person you are.

Some people are quick learners. Others have great memories. Some are real good at getting answers to math problems as long as it's not geometry.

Some people are socially smart. They can wrap anybody around their little finger, while other people are always stepping on somebody's toes.

Some people have perfect pitch and can sing beautifully or play a musical instrument. There are mechanical geniuses who can fix anything with a screwdriver and some bubble gum.

Some people have extraordinary coordination and can do fantastic gymnastic feats. Other people have a hard time learning to type, but can roller skate with the greatest of ease.

Remember, no two people are alike. You are unique, a "star". To become the best you can be, you need to use your smarts to eat right and keep fit. That is what being a Nutrition Super Star is all about!

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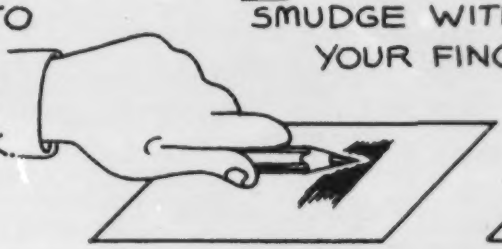
## SKIN PRINTS

If you think your skin is simple, look again. Your skin does a number of jobs and has a number of appearances. It is both thick and thin, light and dark, smooth and wrinkled. Skin prints are a way to take a closer look at the unique living skin bag you live in.

1 RUB SOME SOFT PENCIL LEAD ONTO A SHEET OF PAPER UNTIL IT'S GOOD AND BLACK.

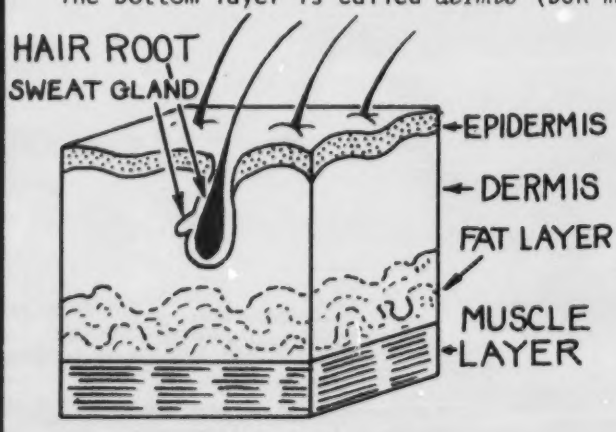


2 PICK UP A SMUDGE WITH YOUR FINGER.

3 CAREFULLY PRESS A PIECE OF SCOTCH TAPE OVER THE SMUDGE ON YOUR FINGER. PULL AWAY THE TAPE AND PRESS IT DOWN RIGHT HERE.

4 COMPARE YOUR SKIN PRINT WITH THOSE OF OTHERS IN YOUR CLASS. ARE ANY TWO SKIN PRINTS THE SAME?

Everyone is unique so no two people will have the exact same finger prints even though everyone's skin cells grow in similar ways. Skin is made up of cells which form layers, just like in a birthday cake. The layer on top is the *epidermis* (eppe DUR miss), the skin's outer limits. This is made up of layers of dead cells. The bottom layer is called *dermis* (DUR miss). It is alive and contains cells which form blood vessels, glands, nerves, and hair roots. Under the dermis is a layer of fat, muscle, and connecting tissue.




Skin cells in the dermis are constantly growing and being pushed to the surface. There they die and form the dead outer layer. The dead outer cells are rubbed off in little bits. In this way your skin reconstructs itself every few weeks. Nutrients in the foods you eat are digested and metabolized forming your changing skin cells.

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## CELL FIRES

Each one of your body's hundred trillion cells needs fuel from food to perform its special job.

Fat and carbohydrate are the main nutrients in food which contain energy. In a pinch, protein can also supply energy. Carbon, oxygen, and hydrogen are the chemicals which form fat and carbohydrate. Protein also contains these chemicals.

Each one of your cells has the ability to process fats, carbohydrates and protein from food and combine them with oxygen and release energy. This process is called *oxidation*.

Oxidation is not a rare event. It happens in your body and all around you everyday. Sometimes it happens slowly. For example, iron slowly combines with oxygen to form rust. Sometimes oxidation happens rapidly. When oxidation happens rapidly, it is called burning.

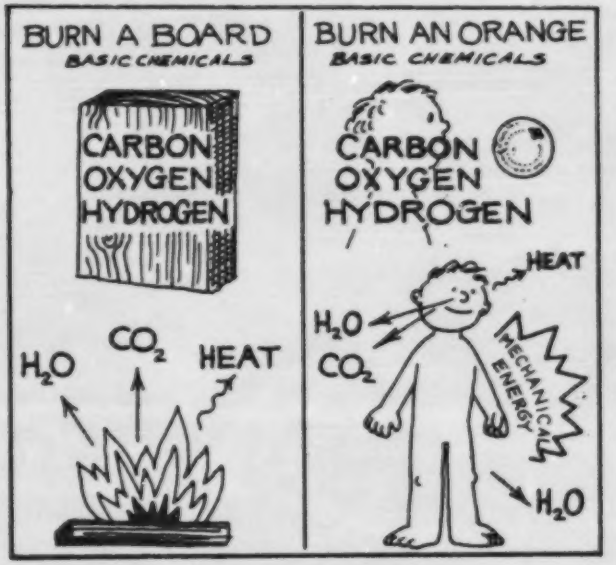
DIRECTIONS: Fill in the blanks with the correct words.

Oxidation in your body cells is a slow, controlled-burning process. This process releases chemical energy from the main energy nutrients - ___ and _____. This energy fuels your body _____ just like gasoline fuels a car engine.

The kind of rapid-fire burning (oxidation) which happens to a board has a lot in common with the slower more controlled burning which happens within your cells and provides _____ to run your body.

When a board is oxidized or _____, its chemical energy is converted only to *heat*. Water ($H_2O$) and carbon dioxide ($CO_2$) are waste products of oxidation.

When nutrients in food are _____ or burned, the chemical energy they contain is converted to *heat* and to *mechanical energy* which fuels activities in all your body cells. _____ and _____ _____ are waste products when food is oxidized by your cells.

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## CELL FIRES *ANSWERS*

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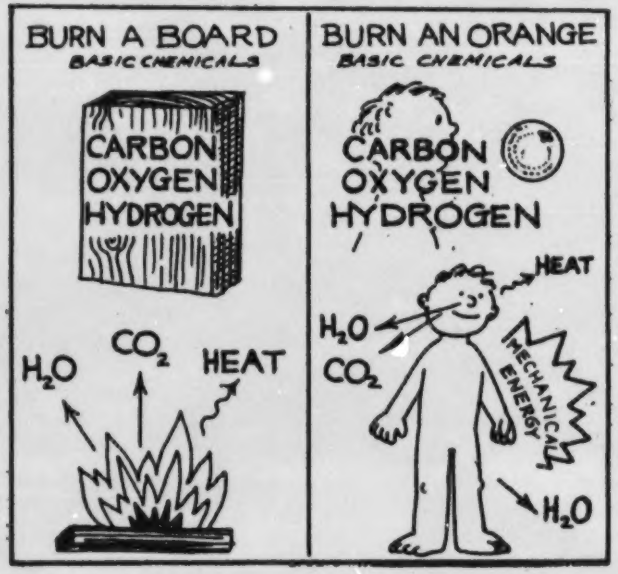



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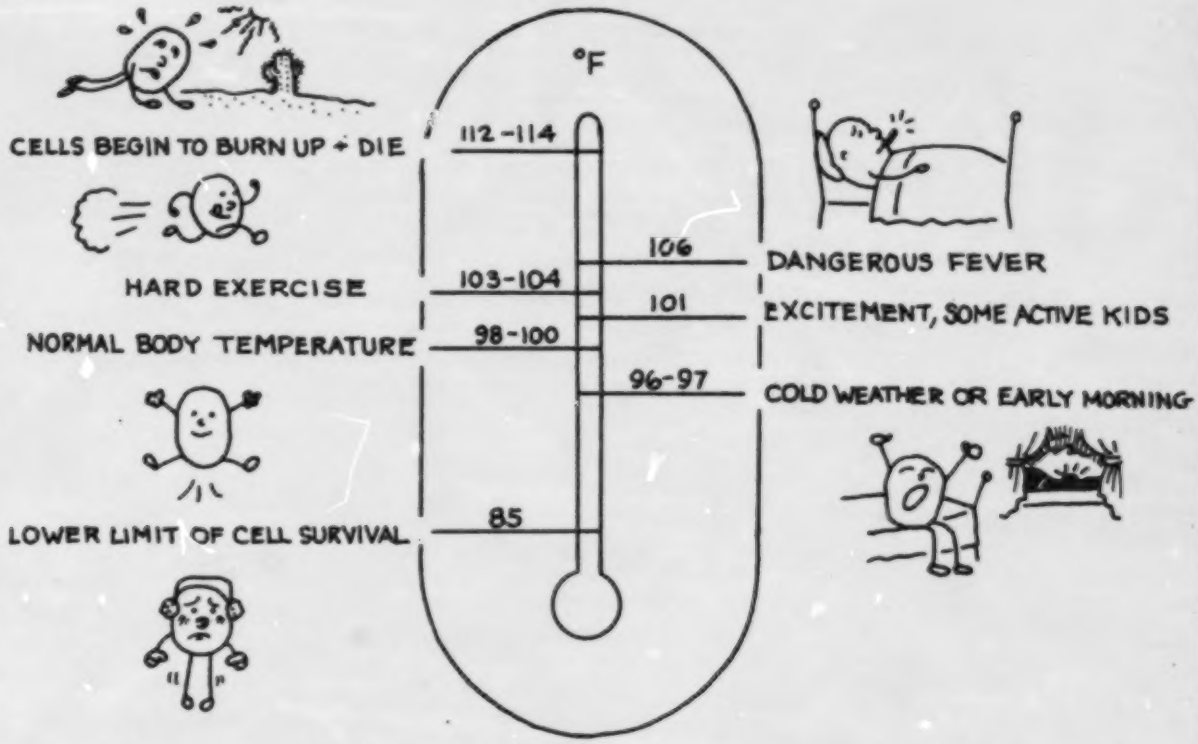
## BODY TEMPERATURES

Food contains fuel nutrients called fat, carbohydrate, and protein. The energy in these three fuel nutrients is measured in a unit called *calories*. All your cells are constantly oxidizing or burning these food fuel calories to produce mechanical energy to run your body's activities. This oxidation or burning process also produces heat energy. That's why you are warmer than this paper. Physical activity speeds up oxidation of food fuels in your cells and increases your body temperature.

The speed at which your cells are burning fuel nutrients in food you eat is called your *metabolic rate*. Your body temperature is a guide to your metabolic rate. The thermometer below shows that fever and exercise *increase* body temperature. This means your metabolic rate also *increases*. Cold temperatures *decrease* your metabolic rate. If you get too hot or too cold, your body cells cannot live. Remember this when you exercise!




*DIRECTIONS: Circle T if the statement is true; circle F if the statement is false.*

T F 1. Your cells are always burning or oxidizing fuels from carbohydrates, fat, or protein to produce energy.

T F 2. People who have high metabolic rates burn up fewer calories than people who have low metabolic rates.

T F 3. If your temperature is higher than 100°F that always means you are sick.

T F 4. An increase in your body temperature is a sign your metabolic rate is increasing.

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## BODY TEMPERATURES (ANSWERS)

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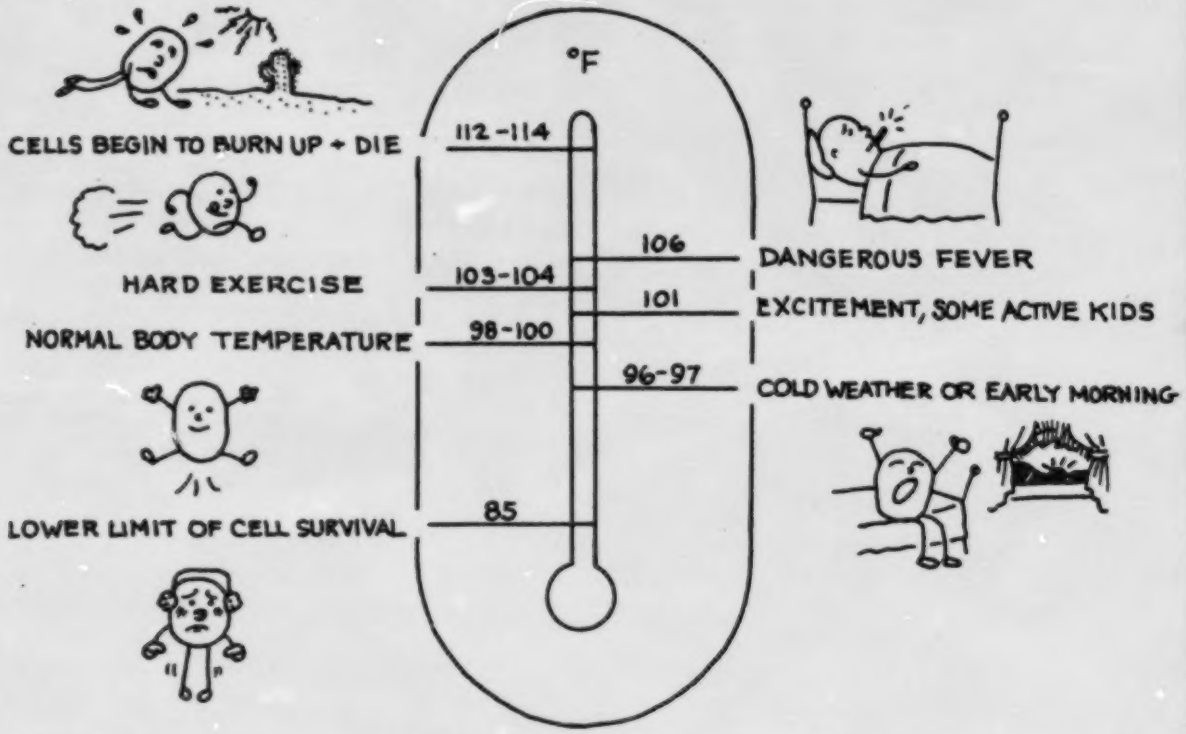


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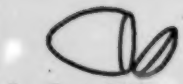
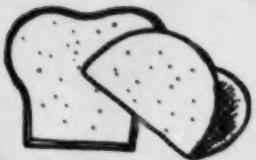
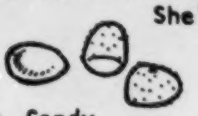
# NUTRITION SEARCH II (ANSWERS)

## FOODS TO TEST


1. Egg White

2. Onion slice


3. Bread or Taco Shell


4. Candy

5. Hot dog or bologna

6. Cheese

7. Hair or Feather

8. Potato

9. Orange slice

10. Tomato

### WATER FIND

1. WEIGH FOOD ON SCALE. RECORD WEIGHT ON THE BACK OF THIS PAGE.

2. PLACE FOOD IN A SUNNY SPOT FOR SEVERAL DAYS.

3. WEIGH AGAIN COMPARE 'BEFORE' & 'AFTER' WEIGHTS.

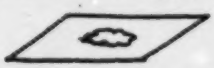
Q: WHAT DID YOU LEARN ABOUT WATER IN FOOD?

### MINERAL HUNT

1. MASH UP FOOD TO BE TESTED.

2. PLACE FOOD ON ALUMINUM FOIL AND BURN OVER FLAME.

3. IF A GRAY ASH REMAINS MINERALS ARE PRESENT. (MINERALS DO NOT BURN)



### VITAMIN C SEARCH

1. MIX 2 CUPS WATER WITH 2 TBSP CORNSTARCH.

2. BOIL STARCH MIXTURE FOR 3 MINUTES, LET COOL.

3. PLACE FOOD IN PLASTIC CUPS.

4. ADD ENOUGH IODINE TO 1 TSP. OF CORNSTARCH MIXTURE TO MAKE IT TURN BLUE.

5. SPREAD BLUE MIXTURE ON THE FOOD IN THE CUP.

6. IF IODINE-CORNSTARCH-WATER MIXTURE TURNS CLEAR, VITAMIN C IS PRESENT.

As you perform each test, put a check next to the foods that contain the nutrient tested for.

| | WATER | MINERALS | VITAMIN C |
|---|---|---|---|
| 1. EGG WHITE | ✓ | ✓ | |
| 2. ONION SLICE | ✓ | ✓ | |
| 3. BREAD or TACO | ? | ✓ | |
| 4. CANDY | ? | ? | |
| 5. HOT DOG | ✓ | ✓ | |
| 6. CHEESE | | ✓ | |
| 7. HAIR or FEATHER | | | |
| 8. POTATO | ✓ | ✓ | ✓ |
| 9. ORANGE | ✓ | ✓ | ✓ |
| 10. TOMATO | ✓ | ✓ | ✓ |

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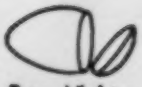
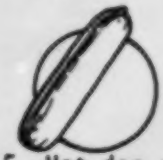
# NUTRITION SEARCH II

## FOODS TO TEST



1. Egg White

3. Bread or Taco Shell

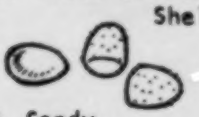


5. Hot dog or bologna

7. Hair or Feather

9. Orange slice

2. Onion slice



4. Candy

6. Cheese

8. Potato

10. Tomato

### WATER FIND

1. WEIGH FOOD ON SCALE. RECORD WEIGHT ON THE BACK OF THIS PAGE.

2. PLACE FOOD IN A SUNNY SPOT FOR SEVERAL DAYS.

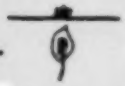
3. WEIGH AGAIN COMPARE 'BEFORE' & 'AFTER' WEIGHTS.

Q: WHAT DID YOU LEARN ABOUT WATER IN FOOD?

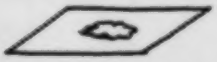
### MINERAL HUNT

1. MASH UP FOOD TO BE TESTED.

2. PLACE FOOD ON ALUMINUM FOIL AND BURN OVER FLAME.



3. IF A GRAY ASH REMAINS MINERALS ARE PRESENT. (MINERALS DO NOT BURN)



### VITAMIN C SEARCH

1. MIX 2 CUPS WATER WITH 2 TBSP CORNSTARCH.

2. BOIL STARCH MIXTURE FOR 3 MINUTES, LET COOL.

3. PLACE FOOD IN PLASTIC CUPS.

4. ADD ENOUGH IODINE TO 1 TSP. OF CORNSTARCH MIXTURE TO MAKE IT TURN BLUE.

5. SPREAD BLUE MIXTURE ON THE FOOD IN THE CUP.

6. IF IODINE-CORNSTARCH-WATER MIXTURE TURNS CLEAR, VITAMIN C IS PRESENT.

As you perform each test, put a check next to the foods that contain the nutrient tested for.

| | WATER | MINERALS | VITAMIN C |
|---|---|---|---|
| 1. EGG WHITE | | | |
| 2. ONION SLICE | | | |
| 3. BREAD or TACO | | | |
| 4. CANDY | | | |
| 5. HOT DOG | | | |
| 6. CHEESE | | | |
| 7. HAIR or FEATHER | | | |
| 8. POTATO | | | |
| 9. ORANGE | | | |
| 10. TOMATO | | | |

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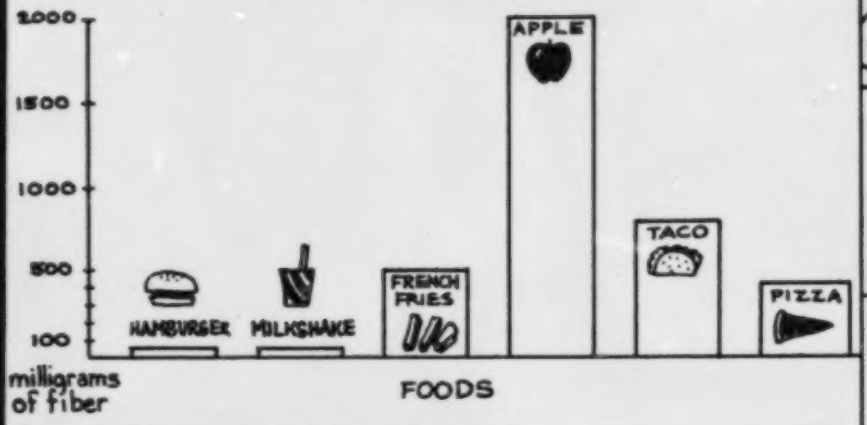
## FIBER - THE UNREFINED CHARACTER

Fiber includes the non-digestible carbohydrate found in whole grain breads and cereals, fruits, vegetables, nuts, and seeds. You need to eat foods which contain fiber to help keep you and your digestive tract physically fit! Eating too much fiber or too little fiber can be bad news for your health! Many nutritionists recommend eating foods which will give you 5,000 to 10,000 milligrams of fiber a day.

### FIVE FOODS FOR FIBER

Many fast foods and highly processed foods are very low in fiber. A hamburger, milkshake and french fries will contain only 800 milligrams of fiber. Add fiber to your fast food meals and snacks by eating fruits, vegetables, nuts and seeds.

### FIBER CONTENTS



### "IN SEARCH OF" - FABULOUS FIBER

Name and locate eating places in your area which serve high fiber foods.

List the high fiber food these eating places serve.

List five foods you like which will add fiber to a fast food meal.

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## WANTED: DEAD NOT ALIVE!

Microorganisms that cause food borne illness are bad news. These are the four major disease-causing bacteria which can contaminate your food. They are dangerous! Learn to identify them and how to prevent their attack.

### SALMONELLA

Suspect described as rod shaped bacteria. Found in the intestinal tracts of humans and animals. She can't be seen or tasted.

Her territories include: raw meats, eggs, poultry, milk, fish and products made from these foods.

Favorite hide outs: On people, pests, insects and rodents.

Guilty of crimes which include:

- Headaches
- Diarrhea
- Abdominal Cramps
- Sometimes vomiting

Attacks within 12-36 hours after eating contaminated foods.

Fight off salmonella by:

1. Cooking foods thoroughly and serving them hot.
2. Keeping cooking utensils and surfaces clean to guard against cross-contamination.
3. Cooking or freezing food promptly after preparing them.
4. Fully reheating stored foods.
5. Washing your hands before touching or eating food, especially after handling raw meat and poultry.
6. Avoiding cracked or broken eggs.

### STAPHLOCOCCUS AUREUS

Goes by the name of staph.

Suspect described as a round or oval shaped organism.

Travels in pairs, long chains or in bunches like grapes.

May be found in territories of moist meat dishes, meat salads, sliced meats, gravies, puddings, and potato salad.

Favorite hide outs are nasal passages of humans and animals, on skin and in hair.

Crimes include:

- Nausea
- Vomiting
- Diarrhea
- Severe Cramps

Attacks 3 to 8 hours after you eat contaminated food.

Out smart him by:

1. Keeping your hands clean when handling food, especially after touching your skin or hair.
2. Cleaning cooking utensils and counter tops with hot, soapy water.
3. Cooling or freezing food promptly after meals.
4. Not sneezing or coughing near food.

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# WANTED: DEAD NOT ALIVE!

## CLOSTRIDIUM PERFRINGENS

Suspect described as a rod shaped spore former.

Travels in pairs or alone. May be found in territory of high protein foods (meat-poultry-eggs).

Hides out in sewage, soil, dust, crops, meat, and poultry.

Crimes include:

- Nausea
- Diarrhea
- Gas pains

Attacks within 8 to 24 hours after you eat contaminated food.

Head him off at the pass by:

1. Cooking high protein foods thoroughly.
2. Keeping foods hot until eaten.
3. Quickly reducing temperature of food by refrigerating them in shallow containers.
4. Keeping leftover sliced meats refrigerated until immediately before they are eaten.

## CLOSTRIDIUM BOTULINUM

Alias-Botulism

Suspect described as rod shaped spore former.

Travels alone or in a short chain.

Found in territories of improperly canned foods like meat, poultry, fish, and almost all canned vegetables.

Hides out in soil, water, produce and other foods, especially in the center where there is no air.

Regarded as highly dangerous!

Crimes include:

- General weakness
- Constipation
- Headache
- Double Vision
- Impaired Speech, Chewing and Swallowing

Attacks within 12-36 hours after you eat contaminated foods.

He can be ambushed by:

1. Following canning instructions closely when home-canning.
2. Never tasting foods which smell foul or are found in leaky, bulging or badly damaged cans, cracked jars with loose or bulging lids or containers which spurt out liquid when opened.

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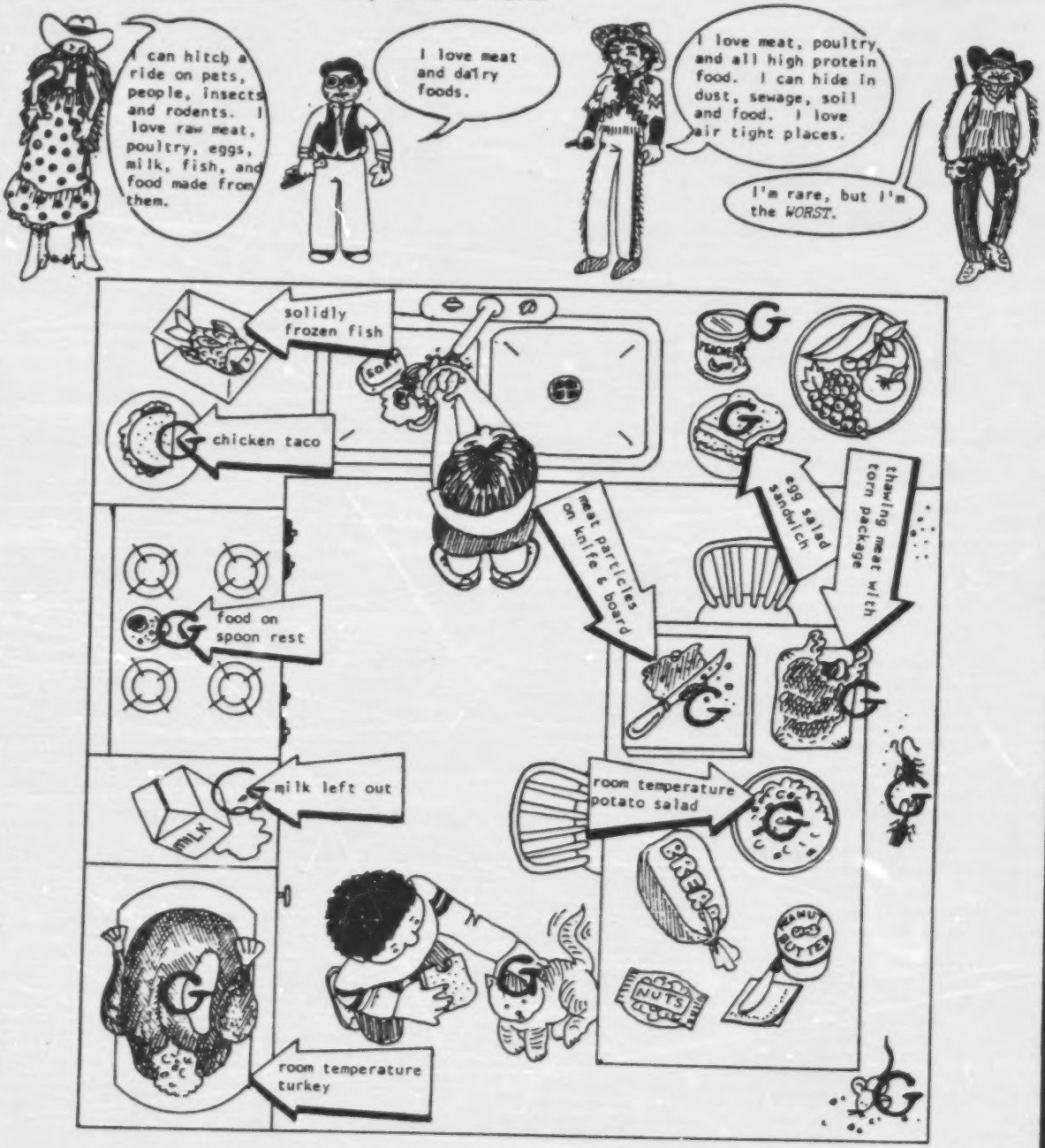
## SHOWDOWN AT THE CARELESS KITCHEN (ANSWERS)

The food borne bacteria have just been tipped off that the Careless family's kitchen is open for attack. Scout out the area and wherever you see a good place for bacteria to attack, put a "G" on the item. If you listen to the four food borne bacteria, you'll know exactly what to mark.


I can hitch a ride on pets, people, insects and rodents. I love raw meat, poultry, eggs, milk, fish, and food made from them.
I love meat and dairy foods.
I love meat, poultry, and all high protein food. I can hide in dust, sewage, soil and food. I love air tight places.
I'm rare, but I'm the WORST.
solidly frozen fish
chicken taco
meat particles on knife & board
egg salad sandwich
thawing meat with torn package
food on spoon rest
milk left out
room temperature potato salad
room temperature turkey
MILK
BREAD
PEANUT BUTTER
NUTS

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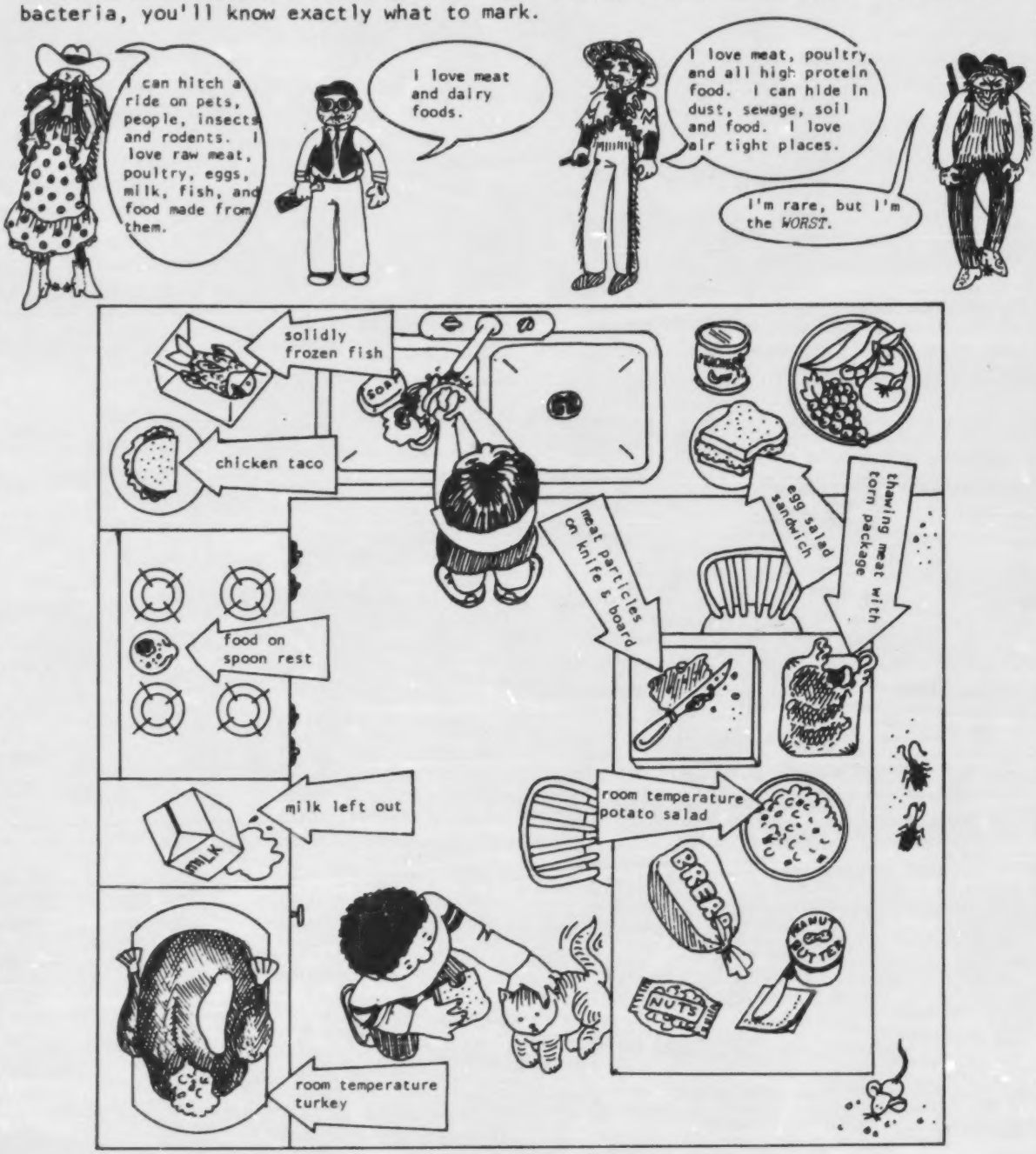
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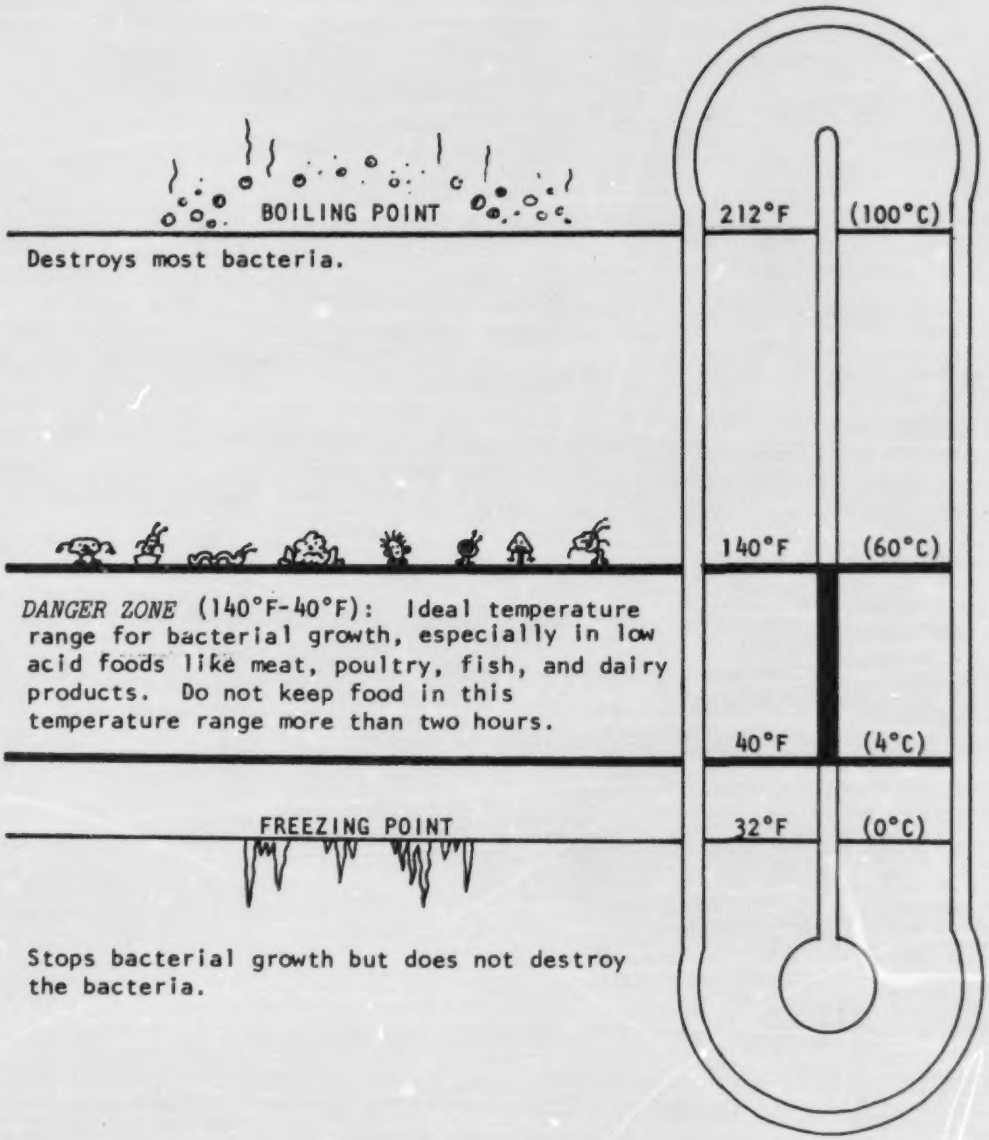
## DANGER ZONE!

Bacteria live everywhere -- in your stomach and intestines, in your nose, in food and in the air. Bacteria only become hazardous to your health when they grow and multiply beyond safe levels. Prevent hazardous bacteria growth by KEEPING HOT FOODS HOT and COLD FOODS COLD and by keeping foods out of the *danger zone*.


BOILING POINT
212°F
(100°C)
Destroys most bacteria.
140°F
(60°C)
DANGER ZONE (140°F-40°F): Ideal temperature range for bacterial growth, especially in low acid foods like meat, poultry, fish, and dairy products. Do not keep food in this temperature range more than two hours.
40°F
(4°C)
FREEZING POINT
32°F
(0°C)
Stops bacterial growth but does not destroy the bacteria.

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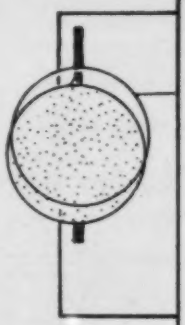
## BACTERIA ROUND-UP

Microorganisms are everywhere. They grow rapidly at body or room temperature. Let's see if we can find some places where bacteria hide out.

**1**

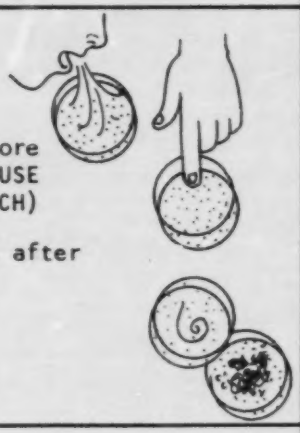
Buy prepared agar petri dishes (*standard plate count or typtic Soy Agar with sheep blood*). Keep petri dishes refrigerated until used.



**2**

Contaminate petri dishes with one or more of the following: (USE SEPARATE DISH FOR EACH)

Hand print (before & after washing)
Cough
Sneeze
Hair
Dust
Dirt

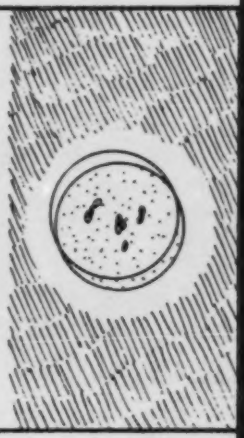


**3**

Label each dish showing what contaminant was used and the date it was contaminated.

**4**

Leave petri dishes in a dark place (out of sun) at room temperature (75°F). If possible, store them at body temperature (98.6°F).



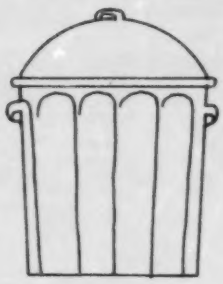
**5**

Store dishes for 24 hours. If you don't see any growth, continue storing the dishes and check for growth over the next 3 or 4 days.

Which contaminants had the most growth? Why?

**6**

When this experiment is over, remember to dispose of these dishes by putting them in a covered trash can.



How can you prevent bacteria in each test item from spoiling food?

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BACTERIA ROUND-UP *ANSWERS*

1. COUGH OR SNEEZE

   Cover your mouth when sneezing or coughing near food.

2. HANDS OR HAIR

   Wash your hands in hot soapy water before handling food, especially after touching your skin or hair.

3. DUST AND DIRT

   Clean cooking utensils and counter tops with hot soapy water. Cover food to prevent spoilage by dust and dirt. Don't serve food which has fallen onto the floor or other dirty areas.

# FOOD POISONING ON TRIAL

A mock trial in which you may recognize some friends of yours -- and some enemies too.

*DIRECTIONS: Make a list of violations of food safety rules found in the trial script. After the class reaches a verdict, develop the ending of the script for the trial. Determine who is responsible for this case of food borne illness. Discuss what the correct behavior would have been in each instance.*

Cast of Characters:

| | | |
|---|---|---|
| BARBIE CUE, the defendant | STANLEY "STUB" BOURNE, prosecuting attorney | IWANDA PLEASE, witness |
| LENA LOTT, the plaintiff | IVAN OBJECTION, defense attorney | JUDGE |
| "SKIP A. STEPPE, witness | MRS. MEANSWELL, teacher, witness | MEMBERS OF THE JURY |

As we enter the courtroom, we hear the prosecuting attorney's opening remarks:

STUB: (with flair) Ladies and gentlemen of the jury, we intend to prove that Barbie Cue did willfully and openly give a party that made the entire class ill; that on the date in question, this same Barbie Cue did serve food that caused her guests severe pain and discomfort. I call my first witness, Lena Lott. Do you swear to tell the whole truth and nothing but...

LENA: You bet I'll tell the truth!

STUB: Miss Lott, on the day in question, did you attend a party at the home of Miss Cue?

LENA: I sure did. (aside to the jury) I attend every party.

STUB: Just answer the questions, Miss Lott. Now tell the court in your own words exactly what happened at that party.

LENA: I always remember everything exactly! Well as I recall, Barbie offered her house for the class party. She said she would provide all of the meat (hamburgers and hot dogs, mind you) if we, the committee would bring everything else. I should have gotten the meat myself! I should have known she'd serve dogfood-burgers. She's so cheap!

IVAN: I object! Witness is prejudicing the jury.

JUDGE: Sustained. Jury will disregard that last remark. Miss Lott, we'll have no more of that kind of outburst. Just give the facts.

LENA: That was a fact! Well, anyway, I made the potato salad the night before the party. My salad is famous! I put gobs of mayonnaise in it and I put lots of hard cooked eggs in it, and I made this really neat design on the top with sliced eggs and parsley. A work of art!

IVAN: Objection!

JUDGE: Sustained. Just get to the point, Miss Lott.

LENA: That is the point! My salad is so good, it couldn't have made anyone sick. I left it out on the counter all night, so that I wouldn't forget it. My cat tried to eat some, but after I fixed it, nobody could even tell where she put her little foot. All I know is that the day after the party, everyone was ready to make out their wills. That's how sick her dogfood-burgers made us. Ask Iwanda, if you don't believe me.

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## FOOD POISONING ON TRIAL *cont'd*

STUB: Thank you, Miss Lott; you may step down. I call Miss Iwanda Please.

IWANDA: I wanted to do something nice for the party. Lena told me I could make some fancy hors'd'oeuvres, so I rolled slices of rare roast beef around cream cheese and made some deviled eggs. I left them out on the table on the patio so that Skip A. Steppe could just pick them up on his way to Barbie's house. That's all I remember. Maybe Skip remembers something.

STUB: I call Skip A. Steppe as my next witness.

SKIP: I don't know what happened. All I know is I was so sick I thought, "This is it, Skip old boy; and you are so young."

IVAN: Objection!

JUDGE: Sustained. Just tell us what you remember, Mr. Steppe.

SKIP: Sure, Judge, sure. As Iwanda said, I picked up the stuff by noon and put it into the trunk of my car. Then I went to my softball game. After the game, I went to the party. The next day Mrs. Meanswell, our teacher, called and told my mother that the whole class had food poisoning and that Lena has accused Barbie of trying to murder the whole class.

STUB: Mrs. Meanswell, will you please take the stand?

MRS. M: I feel really sorry about what happened, but it's not right to place the blame on poor Barbie until we know exactly what happened?

STUB: Exactly what did happen?

MRS. M: Oh. I don't know. By the time I got to the party, all the eating was over. I just helped myself to the leftovers. I like cold hamburgers, and the salad was almost gone so I just finished up the deviled eggs. Then I got sick, but it's not right to blame poor Barbie until we know.

STUB: I have no further witnesses, Your Honor. Prosecution rests.

IVAN: The defense has only one witness, Your Honor. I call Miss Barbie Cue.

BARBIE: This is the most embarrassing thing! (sniff)

IVAN: Just tell us what happened, Miss Cue.

BARBIE: Nothing happened. I bought the meat - hamburger and hot dogs and kept it in the refrigerator until the second we cooked it. I even had it in a plastic container with a lid. As soon as the meat was cooked, I put it back into the same container and served it. That's all that happened. And now this!

IVAN: Now, now, Miss Cue, I'm sure the jury will see that you've been a victim. I have no further questions, Your Honor.

JUDGE: (addressing the jury) I ask you to take all of the facts into consideration and to render a verdict. Who is responsible?

Food Safety: Your Responsibility, Food Safety Activities for Grades 7-12.
Food Safety and Quality Service, United States Department of Agriculture, Washington, D.C. 20250.

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## FOOD POISONING ON TRIAL *ANSWERS*

| CHARACTER | VIOLATION | HOW TO DO IT RIGHT! |
|---|---|---|
| Lena: | Left potato salad on counter overnight. Served food after it was contaminated by an animal. | Refrigerate potato salad immediately. Cover food to prevent contamination by animals. |
| Iwanda: | Left hors'd'oeuvres containing meat and eggs unrefrigerated after being made for more than two hours. | Refrigerate hors'd'oeuvres immediately after being prepared. Leave a note for Skip indicating location of hors'd'oeuvres or make other arrangements for pickup. |
| Skip: | Leaving food containing meat and eggs in car trunk for over two hours. | Deliver the food first, then attend activity. |
| Mrs. M.: | Eating meat and egg leftovers which had been unrefrigerated and held in the danger zone for more than two hours. | Eating only properly refrigerated food. |
| Barbie: | Placing cooked food into unwashed container. | Place cooked food in thoroughly cleaned container.<br><br>*Barbie did have some food safety smarts because she put the meat into the refrigerator and kept it covered. |

Lena, Iwanda, Skip, Mrs. Meanswell, and Barbie all were partly responsible for the food poisoning.

## THE TALE OF TOM E. ACHE

Tom E. Ache always seems to get sick right in the middle of something fun. Read his story and see if you can find out what's making him sick. Then answer the questions below.

I don't get sick very often. Usually I'm healthy as a horse. About four times a year though, I get attacked by a "bug". The "bug" doesn't last long, but it's painful. It's not caused by excitement because I get excited lots of times, and I don't get sick.

Last summer my family and I went to the park. We packed a lunch and arrived at the park before nine. When it was lunch time, we opened the picnic basket. I dug into the cold chicken (which wasn't very cold after sitting in the sun all morning) and ate until I was full. We left the park early that day because around two o'clock I got dizzy, my head ached and my stomach hurt.

Last Thanksgiving, we left everything on the table after eating so we could get to the football game on time. When we arrived home from the game several hours later, I ate a second dinner right from the platters. The next day I was so sick to my stomach that my family cancelled their plans to go Christmas shopping.

Last year at my birthday party I fixed the hamburgers. I took a handful of raw meat and slapped it together into patties with the hamburger turner. I used the same turner to put the cooked burgers on the buns and to stir the barbecue sauce. In the middle of the night, I woke up with stomach pains and a headache. Everyone at the party caught the same "bug".

At a cookout we had last year, Mom fixed pork chops. She took eight big chops out of the freezer the morning of the party before she went to work. They were left out on the kitchen counter all day, so they were thawed out and ready to cook by evening. To save washing an extra plate, the cooked chops were served on the same plate that was used for thawing. By morning, everyone including me was sick. What could be wrong with me?

YOU BE THE DETECTIVE AND ANSWER THE FOLLOWING QUESTIONS:

1. What four special times was he sick?

2. Each time he was sick, how did he feel?

3. He got sick after he did what?

4. What do you think could be wrong with Tom?

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ANSWERS

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YOU BE THE DETECTIVE AND ANSWER THE FOLLOWING QUESTIONS:

1. What four special times was he sick?
   Summer (at the park), Thanksgiving, Birthday, Cookout.
2. Each time he was sick, how did he feel?
   Dizzy, Headache, Stomach ache.
3. He got sick after he did what?
   Ate certain foods.
4. What do you think could be wrong with Tom?
   Food left out at room temperature or in hot sun for too long encouraged harmful bacteria to grow. Utensils and hands were not always kept clean.

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## FOOD SAFETY DETECTIVE

Read the stories below. After reading each story, list the right and wrong things these people did when they handled food.

**1**

Jose's mother decided to make tacos for supper. She took a package of ground beef from the freezer and set it on the counter to thaw while she was at work. She uncovered the ground beef because she thought it might thaw faster. But, she saw some flies and covered the meat again. When Jose got home after school and swimming, he washed his hands. Then he helped his mother cook the thawed ground beef and fill the taco shells.

RIGHT WRONG

**2**

Maria and Jim came home after playing softball with their friends. Jim had cut his hands while sliding into second base. They were hungry so Jim went to the kitchen and made some sandwiches. Maria poured two glasses of milk. One glass had a small crack in it. Jim took the sandwiches he had made to the kitchen table. He sneezed on the sandwiches and then gave Maria a sandwich.

RIGHT WRONG

**3**

After school one day, Jane and her friend, Amy, decided they wanted a snack. They found a dented can of chili in the cupboard. As they heated the chili, Jane and Amy noticed that it smelled bad. They decided not to eat it and threw it out.

RIGHT WRONG

**4**

David and his mother went to the grocery store. When they reached the meat counter, David's mother chose a package of chicken. Next they picked up a container of cottage cheese and a half gallon of milk. David took the groceries to the car and waited there in the hot car for an hour while his mother went to the drugstore to refill a prescription.

RIGHT WRONG

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## FOOD SAFETY DETECTIVE

Read the stories below. After reading each story, list the right and wrong things these people did when they handled food.

### 1

Jose's mother decided to make tacos for supper. She took a package of ground beef from the freezer and set it on the counter to thaw while she was at work. She uncovered the ground beef because she thought it might thaw faster. But, she saw some flies and covered the meat again. When Jose got home after school and swimming, he washed his hands. Then he helped his mother cook the thawed ground beef and fill the taco shells.

| RIGHT | WRONG |
|---|---|
| COVERING MEAT<br>WASHING HANDS | THAWING MEAT OUTSIDE OF THE REFRIGERATOR<br>UNCOVERING MEAT |

### 2

Maria and Jim came home after playing softball with their friends. Jim had cut his hands while sliding into second base. They were hungry so Jim went to the kitchen and made some sandwiches. Maria poured two glasses of milk. One glass had a small crack in it. Jim took the sandwiches he had made to the kitchen table. He sneezed on the sandwiches and then gave Maria a sandwich.

| RIGHT | WRONG |
|---|---|
| | NOT WASHING HANDS<br>NOT COVERING CUTS<br>USING CRACKED GLASS<br>SNEEZING ON FOOD |

### 3

After school one day, Jane and her friend, Amy, decided they wanted a snack. They found a dented can of chili in the cupboard. As they heated the chili, Jane and Amy noticed that it smelled bad. They decided not to eat it and threw it out.

| RIGHT | WRONG |
|---|---|
| NOT EATING FOOD THAT SMELLS BAD<br>DISPOSING OF SPOILED FOOD | |

### 4

David and his mother went to the grocery store. When they reached the meat counter, David's mother chose a package of chicken. Next they picked up a container of cottage cheese and a half gallon of milk. David took the groceries to the car and waited there in the hot car for an hour while his mother went to the drugstore to refill a prescription.

| RIGHT | WRONG |
|---|---|
| BUYING NUTRITIOUS FOOD (CHICKEN, COTTAGE CHEESE, MILK) | KEEPING GROCERIES IN A HOT CAR |

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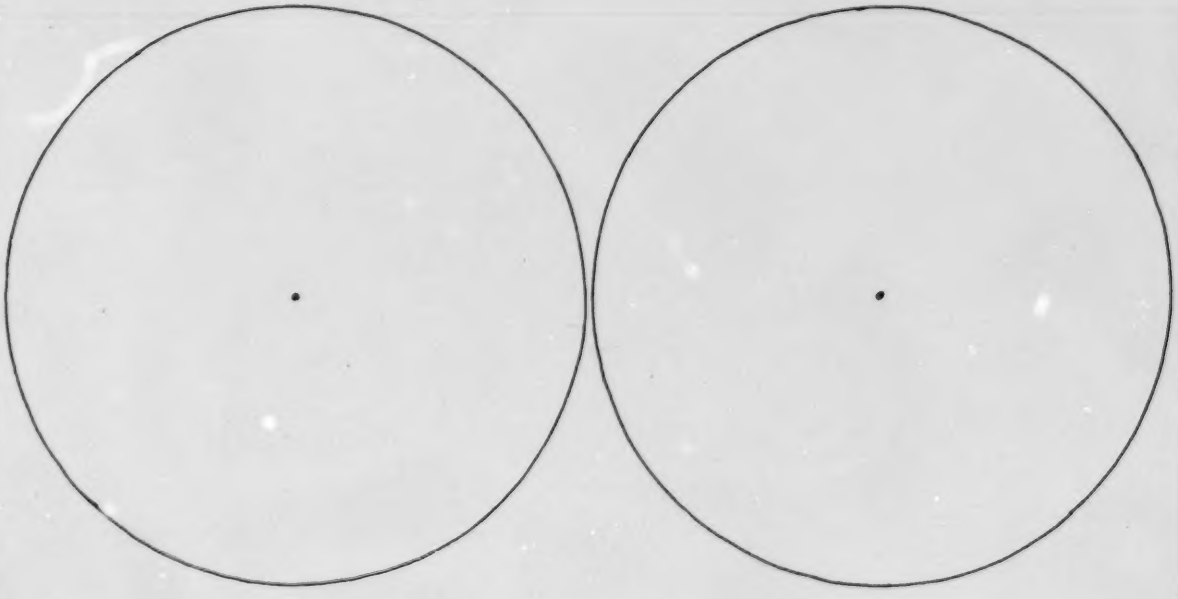
## FOOD-FITNESS VALUE SHAPERS

Can you identify where your food values come from? Divide the pies below into slices. Make one slice for each of the value shapers listed. Make the size of each slice represent the percent which each value shaper influences your food and fitness choices.

| | FOOD ↓ | FITNESS ↓ | FOOD ↓ | FITNESS ↓ | |
|---|---|---|---|---|---|
| FAMILY | ____% | ____% | ____% | ____% | TELEVISION |
| FRIENDS | ____% | ____% | ____% | ____% | SCHOOL |
| TEACHERS | ____% | ____% | ____% | ____% | READING |
| COACHES | ____% | ____% | ____% | ____% | TRAVEL |
| RELATIVES | ____% | ____% | ____% | ____% | MOVIES |

FOOD VALUE SHAPERS

FITNESS VALUE SHAPERS



Do you see any changes you would like to make in who or what influences your values about food or fitness?

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## VEGETARIANISM

Vegetarianism is a way of eating which excludes all animal flesh. Both vegetarian and meat containing diets can be good or poor nutritionally depending upon the food choices a person makes. It is not hard to be a well-nourished vegetarian nor is vegetarianism a rare or exotic diet. As a matter of fact, many of the people in the world eat vegetarian diets. Today, more Americans are choosing to eat vegetarian style.

Can you think of reasons people decide to eat a vegetarian diet?

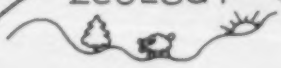
Discuss the reasons shown inside the circles and provide examples or explanations in the spaces provided.

ETHICS/MORALS

RELIGION

ECONOMICS

ECOLOGY



HEALTH

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## VEGETARIAN DIET STYLES

There are different types of vegetarian diets. Vegetarian diets are very nutritious if you eat foods following the vegetarian fitness food plans. However, there are certain nutrients which could be in short supply if food sources that contain lots of those nutrients aren't eaten regularly.

| DIET | FOODS EATEN | POSSIBLE LIMITED NUTRIENTS |
|---|---|---|
| VEGAN | Plant Foods | Minerals - *Calcium, Iron, Zinc*<br>Vitamins - *Riboflavin, Vitamin $B_{12}$* |

*NUTRITION FLASH*

*Be Aware* that the vegan diet is not recommended for children and pregnant women without the guidance of nutrition experts. Discuss possible reasons for this nutrition flash???!

| | | |
|---|---|---|
| LACTO VEGETARIAN | Plant Foods<br>Dairy Products | Minerals<br>*Iron*<br>*Zinc* |
| LACTO-OVO VEGETARIAN | Plant Foods<br>Dairy Products<br>Eggs | |

### GOOD PLANT SOURCES OF LIMITED NUTRIENTS

| | |
|---|---|
| Calcium | Calcium-fortified soy milk<br>Dark leafy green vegetables, sesame seeds<br>Legumes--beans, peas |
| Iron | Legumes--beans, peas<br>Whole grains, dark leafy green vegetables<br>Dried Fruit<br>If you eat these foods with foods high in Vitamin C, your body will absorb more iron. |
| Zinc | Legumes<br>Whole grains |
| Riboflavin | Legumes--bean, peas<br>Dark leafy greens--romaine lettuce, loose leaf lettuce, broccoli, kale, beet-collard-mustard greens |
| Vitamin $B_{12}$ | $B_{12}$ fortified soy milk<br>$B_{12}$ supplement |

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## VEGETARIAN FITNESS-FOOD GUIDE

The Vegetarian 4 Food Groups Fitness Plan listed below is a guide to a nutritious diet. Follow the plan *each day* for good nutrition if you choose to eat vegetarian style.

| VEGAN | LACTO-OVO |
|---|---|
| **Legumes**<br>1/3 cup beans<br>PLUS<br>3 cups soy milk fortified with calcium and Vitamin $B_{12}$ for teens and children (2 cups for adults)<br>OR<br>1 1/4 cup beans plus other sources of calcium and Vitamin $B_{12}$. | **Milk and Eggs**<br>3-4 servings for teens and children (2 servings for adults)<br>*One Serving =*<br>*1 cup milk or yogurt*<br>*1 1/2 ounces of cheese*<br>*1 1/2 cups cottage cheese*<br>*Eggs are optional - up to 4 per week* |
| **Grains, Nuts and Seeds**<br>4 slices whole-grain bread<br>PLUS<br>1 serving nuts or seeds<br>PLUS<br>3-5 servings of grains, nuts and seeds | **Grains, Legumes, Nuts and Seeds**<br>4 slices whole-grain bread<br>PLUS<br>1 serving of beans<br>PLUS<br>1/4 cup nuts or seeds |
| *One Serving =*<br>*1 slice bread, tortilla or pancake*<br>*1 cup oats or rice*<br>*1/3 cup beans or 1/4 cup nuts or seeds* | |
| **Vegetables**<br>4 or more servings (2 servings should be dark leafy greens) | **Vegetables**<br>3 or more servings (1 serving should be dark leafy greens) |
| DARK LEAFY GREENS =<br>Romaine lettuce, loose leaf lettuce, broccoli, kale, beet or collard or mustard or dandelion greens<br>*One Serving =*<br>*1/2 cup vegetables*<br>*3/4 cup salad* | |
| **Fruits**<br>1-4 servings (1 serving should be a Vitamin C-rich food) | **Fruits**<br>1-4 servings (1 serving should be a Vitamin C-rich food) |
| *One Serving =*<br>*1 medium size fruit or 1/2 cup fruit*<br>*1/2 cup juice*<br>*1/4 medium melon* | |

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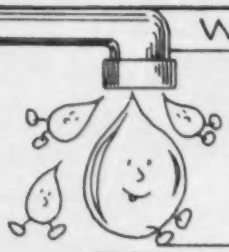
# FITNESS-FOOD GUIDE



## WATER

Drink plenty of water everyday. The hotter the weather is and the more active you are, the more water or fluids you need. One quick way to tell if you are getting enough water is to check the color of your urine. It should be light yellow. If it's not, keep drinking!

## 4 FRUIT & VEGETABLE SERVINGS

A SERVING IS ½ CUP OR A MEDIUM-SIZE FRUIT OR VEGETABLE.

Regularly eat Vitamin C rich ones--citrus fruits, berries, tomatoes, potatoes and Vitamin A rich ones--dark green or deep yellow fruits or vegetables. Eat unpeeled fruits and vegetables for extra fiber. Fruits and vegetables are low in sodium and fat unless they are added during preparation.

## 4 GRAIN-BREAD OR CEREAL SERVINGS

A SERVING IS 1 SLICE OF BREAD, TORTILLA OR PANCAKE; ½ CUP COOKED PASTA, CEREAL, RICE OR GRITS; OR 1 OZ. READY-TO-EAT CEREAL.

Whole grains or enriched servings are the best choices. Smart eaters read labels to check on the sugar, sodium and fat content of these foods.

## 3 MILK & CHEESE SERVINGS

A SERVING IS 1 CUP MILK OR PLAIN YOGURT; A 2-INCH CUBE OF CHEESE; 2 CUPS OF COTTAGE CHEESE; OR 1½ CUPS OF ICECREAM OR ICE MILK.

Skim and low fat milk, cheese, or yogurt has as much protein and calcium as whole milk but are lower in fat. Flavcred yogurt, ice cream, and ice milk are high in sugar. Recommended number of servings is 3-4 or more for teens, 2 or more for adults.

## 2 MEAT-POULTRY-FISH-BEAN SERVINGS

A SERVING IS 2 OZ LEAN COOKED MEAT, POULTRY OR FISH, 2 EGGS, 1 CUP COOKED DRIED BEANS OR PEAS, ¼ CUP PEANUT BUTTER, OR ½-1 CUP NUTS OR SEEDS.

Fatty meats are high in fat and calories. Turkey, chicken, fish, veal, and some beef and pork cuts are lean, and therefore low in fat and calories.

## ? SWEETS-FATS-ALCOHOL

Foods in this group include candy, soft drinks, sugar, honey, sweet toppings, cake, salad dressings, butter, margarine, wine, beer, and liquor. These foods give you calories from sugar, fat, and alcohol and very few vitamins, minerals, fiber, water or protein which your body needs to use these calories efficiently.

★FILL UP ON 4-4-3-2 FOODS FIRST. EAT ? FOODS AS TREATS WITH CAUTION!

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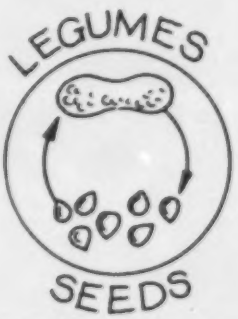
## PROTEIN PARTNERS

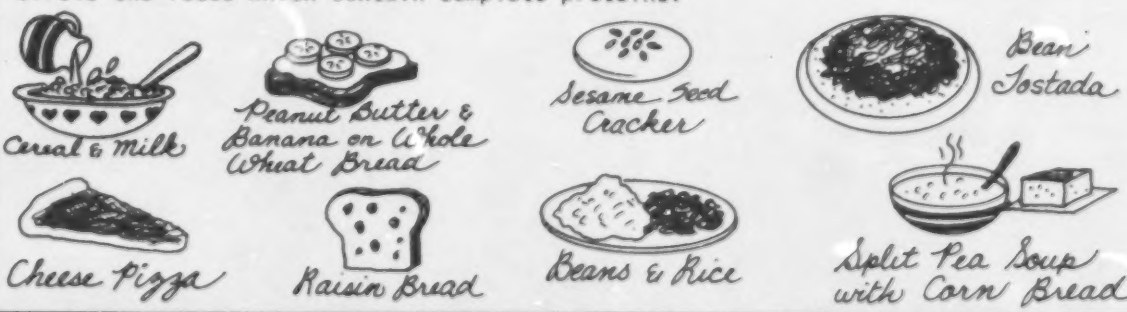
Your body needs protein to grow and repair itself. Protein is made up of building blocks called amino acids. The *essential amino acids* (EAA) are those our bodies can't make so we need to get them from our food. We need certain amounts of the EAA every day so our body can best use the protein we eat. Animal foods like eggs, milk, meat, fish, and poultry contain all the EAA and are called "complete" or "high quality" protein foods. Plant foods by themselves don't contain all the EAA and are called "incomplete" or "low quality" protein foods. Vegetarians get high quality protein by combining plant foods together and by combining plant foods with some animal foods. Foods in the circles below show complimentary protein foods. Eating these foods together is called protein combining and creates complete protein just like you find in animal food.

THESE COMBINATIONS MAKE COMPLETE PROTEINS




| DAIRY PRODUCTS | GRAINS | LEGUMES | SEEDS |
|---|---|---|---|
| MILK<br>BUTTERMILK<br>YOGURT<br>CHEESE | BREAD<br>PASTA<br>TORTILLAS<br>FLOUR<br>RICE<br>OATS<br>CORN | PEANUTS<br>SPLIT PEAS<br>LENTILS<br>PINTO BEANS<br>KIDNEY BEANS<br>NAVY BEANS<br>SOYBEANS<br>SOYMILK<br>BEAN SPROUTS<br>TOFU | SUNFLOWER SEEDS<br>SESAME SEEDS<br>ALFALFA SEEDS<br>ALFALFA SPROUTS |

Circle the foods which contain complete proteins.

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# PROTEIN PARTNERS *ANSWERS*

Your body needs protein to grow and repair itself. Protein is made up of building blocks called amino acids. The *essential amino acids* (EAA) are those our bodies can't make so we need to get them from our food. We need certain amounts of the EAA every day so our body can best use the protein we eat. Animal foods like eggs, milk, meat, fish, and poultry contain all the EAA and are called "complete" or "high quality" protein foods. Plant foods by themselves don't contain all the EAA and are called "incomplete" or "low quality" protein foods. Vegetarians get high quality protein by combining plant foods together and by combining plant foods with some animal foods. Foods in the circles below show complimentary protein foods. Eating these foods together is called protein combining and creates complete protein just like you find in animal food.

THESE COMBINATIONS MAKE COMPLETE PROTEINS

| DAIRY PRODUCTS | GRAINS | LEGUMES | SEEDS |
|---|---|---|---|
| MILK<br>BUTTERMILK<br>YOGURT<br>CHEESE | BREAD<br>PASTA<br>TORTILLAS<br>FLOUR<br>RICE<br>OATS<br>CORN | PEANUTS<br>SPLIT PEAS<br>LENTILS<br>PINTO BEANS<br>KIDNEY BEANS<br>NAVY BEANS<br>SOYBEANS<br>SOYMILK<br>BEAN SPROUTS<br>TOFU | SUNFLOWER SEEDS<br>SESAME SEEDS<br>ALFALFA SEEDS<br>ALFALFA SPROUTS |

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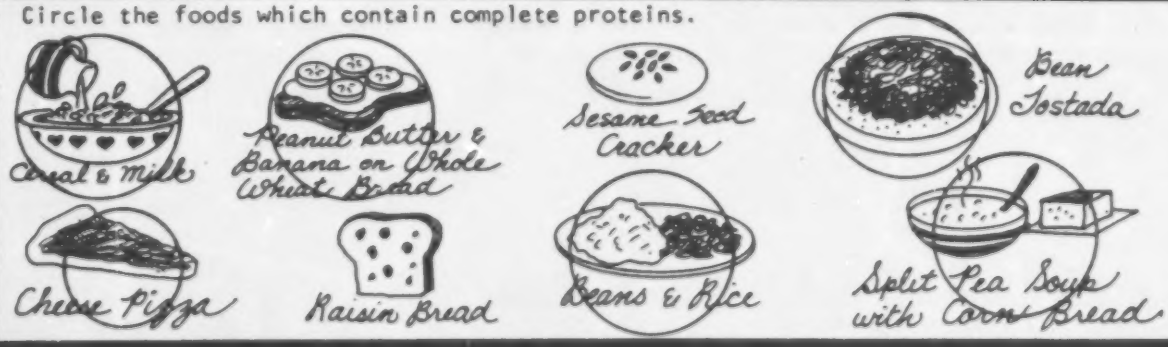


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# SPROUTS

Seeds are storehouses of energy. This energy is used for early growth of new plants. The first step in the growth of a new plant is sprouting. Sprouts can be grown from alfalfa seeds, unhulled sunflower and sesame seeds, mung beans, lentils, corn and barley. Sprouts are vegetables that mature in three to five days, require no soil to grow, are low on the food chain, can be eaten raw, and are a high nutrient density food. Sprouts are low in calories and are rich in Vitamins A, B-complex, C, and minerals like calcium. Sprouts even contain protein.

## GROW YOUR OWN SPROUTS

*SUPPLIES:*

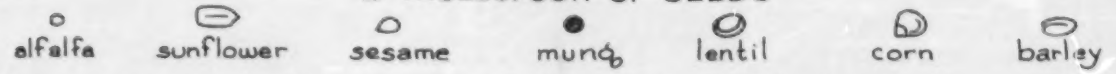
1 16-OZ (2 CUP) WIDE MOUTH JAR

CHEESECLOTH OR NYLON NETTING

1 CUP WARM WATER

1 RUBBER BAND

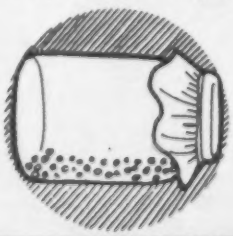
1 TABLESPOON OF SEEDS

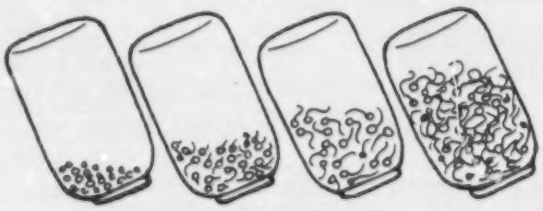



*DIRECTIONS:*

1. Remove broken or cracked seeds. Wash seeds thoroughly.
2. Place seeds in jar. Pour in warm water. Place cheesecloth or netting over mouth of jar and secure with rubber band.

3. Put jar in a warm, dark place overnight. (a cupboard or closet)
4. Empty water from jar next morning.
5. Rinse the seeds with warm water.
6. Empty water from jar again. Lay jar on its side in the cupboard.






7. Rinse seeds two or three times a day for three or four days.
8. On the last day, take jar out of the cupboard and place in daylight. (This is what makes the sprouts produce chlorophyll and turn green)
9. Store sprouts in the refrigerator. Rinse them once a day to keep them fresh.

ENJOY!!

Sprouts can be eaten raw in salads, sandwiches, or placed in casseroles, breads or scrambled eggs.

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## EATING ON TARGET

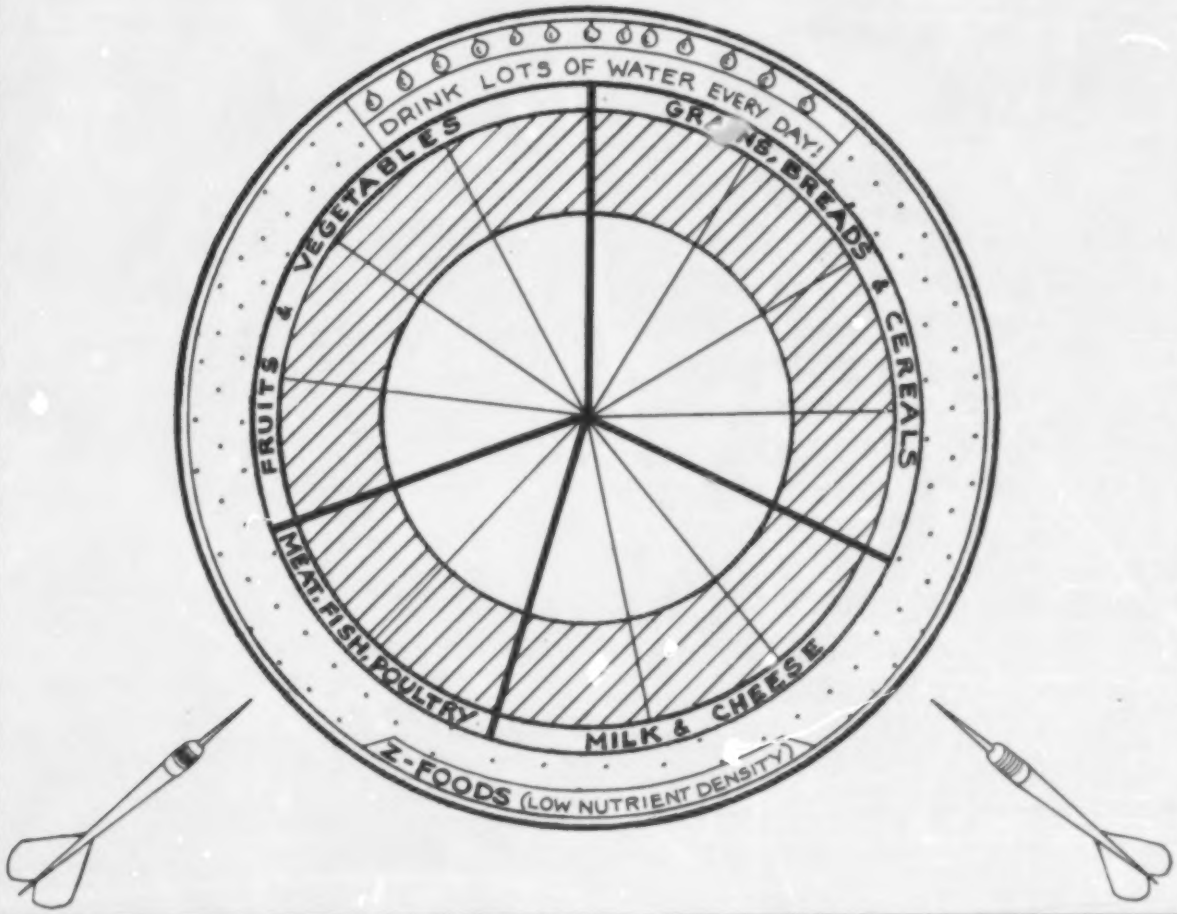
This Food-Fitness dart board will help you tune into how smart you are about what you eat. Smart eaters hit the bull's eye regularly!

Write down what you eat for 1 day. Start when you get up and end when you go to bed. After you eat something in a *Fitness-Food Bull's Eye* group, put a check mark in the bull's eye next to that group. When the bull's eye for each food group is full, put your check marks in the ▨ section of each group. How full is your bull's eye? A full bull's eye is a sign of a smart eater!

Foods like sweets fat and alcohol don't hit the bull's eye. These foods give you *calories* and few if any other nutrients like protein, vitamins, minerals or fiber. They are called *low-nutrient density* foods. Some people call them junk foods.

Put a Z in the dotted (⋱) ring around the bull's eye for each low-nutrient density food you eat.

Smart eaters have a full bull's eye and get most of their energy or calories from foods in the *Fitness-Food Plan*. They occasionally eat Z foods for extra calories.

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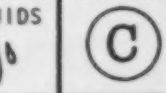
## FITNESS-FOOD GUIDE COUNTDOWN

1. Record what you eat for one day. Start in the morning and end at bedtime. Record the name of food or drink and how much you ate.
2. Record the number of servings from each Food Group in the spaces provided.
3. Record the number of calories in each food which you ate. Add up the total calories you ate in one day. Is there a difference between recommended servings and what you actually ate?

| FOOD EATEN TODAY | NUMBER OF SERVINGS | | | | | | |
|---|---|---|---|---|---|---|---|
| NAME OF FOOD AND AMOUNT EATEN | FRUIT & VEGETABLE | GRAINS | DAIRY | MEAT OR ALTERNATE | FATS OR SWEETS | WATER & LIQUIDS | CALORIES  |
| BREAKFAST | | | | | | | |
| SNACK | | | | | | | |
| LUNCH | | | | | | | |
| SNACK | | | | | | | |
| DINNER | | | | | | | |
| SNACK | | | | | | | |
| TOTAL SERVINGS | | | | | | | |
| RECOMMENDED SERVINGS | 4 | 4 | 3 | 2 | 7 | 7 | ♀ 2100<br>♂ 2800 |
| DIFFERENCE | | | | | | | |

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## THE BODY SHOP

Complete the BODY SHOP checkout to find out what kind of shape your body is in. Record your measurements and scores as you complete each test. What parts of you are in good shape? What parts need a tune up?

NAME _____

Age _____

### HEIGHT & WEIGHT

| | TEST 1 | TEST 2 |
|---|---|---|
| DATE | | |
| HEIGHT | | |
| HEIGHT GROUP | | |
| WEIGHT | | |
| WEIGHT GROUP | | |

### PULSE

| | TEST 1 | TEST 2 |
|---|---|---|
| DATE | | |
| RESTING PULSE | | |
| PULSE AFTER EXERCISE | | |

### PHYSICAL FITNESS TEST

### BODY COMPOSITION

Put a Check Mark (✓) in your percentile rank

PERCENTILE

| | SIT-UPS | | 9 MINUTE/ 1 MILE RUN | | SIT & REACH | | TRICEPS SKINFOLD | | TRICEPS SUBSCAPULAR SKINFOLD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 100 | | | | | | | | | | |
| 95 | | | | | | | | | | |
| 90 | | | | | | | | | | |
| 85 | | | | | | | | | | |
| 80 | | | | | | | | | | |
| 75 | | | | | | | | | | |
| 70 | | | | | | | | | | |
| 65 | | | | | | | | | | |
| 60 | | | | | | | | | | |
| 55 | | | | | | | | | | |
| 50 | | | | | | | | | | |
| 45 | | | | | | | | | | |
| 40 | | | | | | | | | | |
| 35 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 15 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 5 | | | | | | | | | | |

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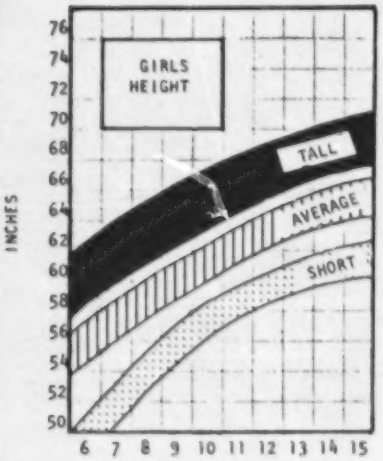
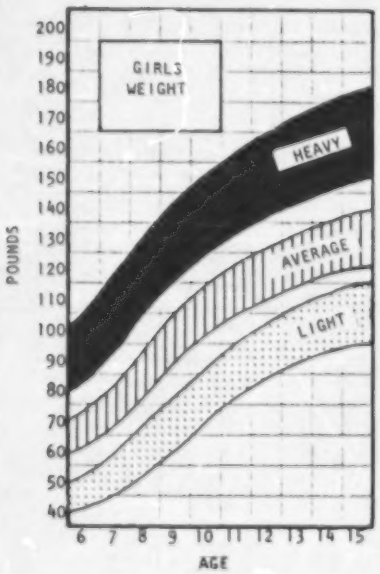
## MEASURE UP




The shaded areas show the range of actual heights and weight for most adolescents in the United States.

### HEIGHT STATUS

1. Find your age along the bottom of the chart. Draw a vertical line up from your age to the top of the chart.

2. Find your height on the top chart and draw a horizontal line across. Mark an "X" where your height line crosses your age line. RECORD your height and height group (Tall, Average, or Short) on Handout #26, THE BODY SHOP.

### WEIGHT STATUS

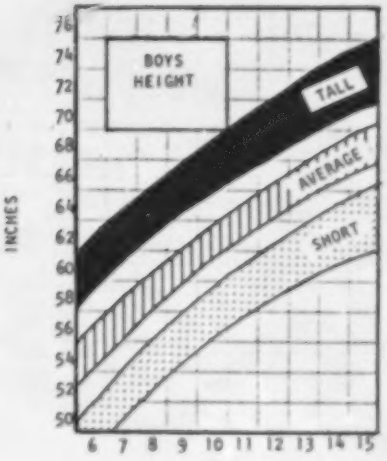
1. Find your weight on the bottom chart and draw a horizontal line across. Mark an "X" where your weight line crosses your age line. RECORD your weight and weight group (Heavy, Average, or Light) on THE BODY SHOP.

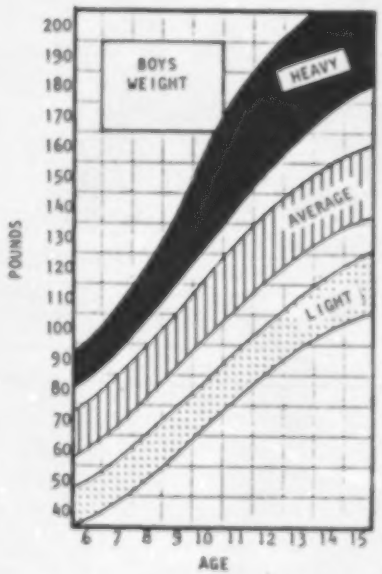
### EXAMINING THE FACTS ON HEIGHT AND WEIGHT

What is the range of heights for most people your age?

What is the range of weights for most people your age? Is your weight within this range? If not, what are some reasons?

Going on crash diets to lose weight can be dangerous. If you are concerned about your weight, a health professional can assist you in deciding if you need to lose or gain weight.




27

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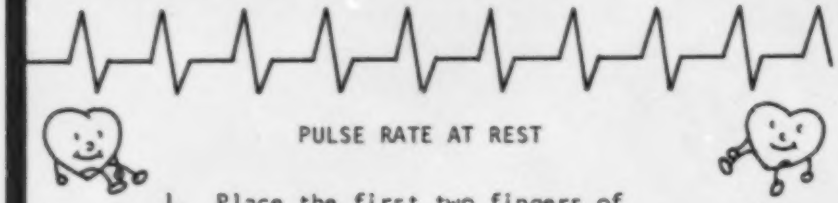
# PULSE RATE CHECK OUT

The pulse rate is one way to test your heart's fitness level. Check out your heart's fitness level by taking your pulse three different times - at rest, immediately after exercising, and two minutes after exercising.



## PULSE RATE AT REST

1. Place the first two fingers of your right hand on the inner thumb side of your wrist or on your neck, a little below the earlobe and to the side of your Adam's Apple.

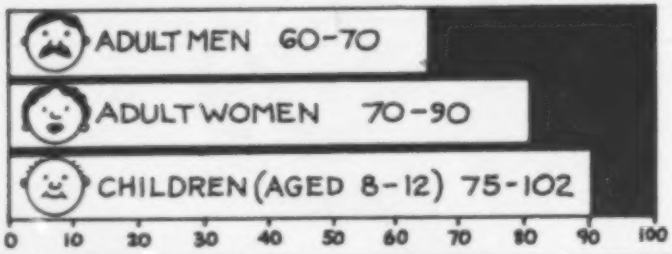
2. Count the number of beats for 10 seconds.

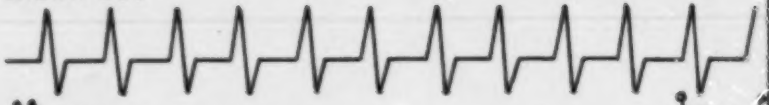
3. Multiply this number by six to get the pulse rate for one minute.

4. Record this number on Handout #26, THE BODY SHOP.

Average resting pulse rates vary with age and sex.

**RESTING PULSE RATES (BEATS PER MINUTE)**



## PULSE RATE IMMEDIATELY AFTER EXERCISE

1. Do 40 jumping jacks.
2. Immediately take your pulse.
3. Record the results on THE BODY SHOP.

## PULSE RATE TWO MINUTES AFTER EXERCISE

1. Sit for two minutes, and take your pulse again.
2. Record the results on THE BODY SHOP.

## IS YOUR HEART FIT?

After exercising, your pulse rate could go as high as 50 beats over your resting pulse rate and still be normal.

If your recovery rate is normal, in two minutes your pulse rate will return to within 5 to 10 beats of your resting pulse rate.

Why are the pulse rates different for each of the three measurements?

28

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# NUTRITION SUPER STARS FITNESS PLAN

Healthy and fit Superstars have these four parts to their lifestyle plan.

## 1 MEDICAL EVALUATION

Get a medical evaluation and clearance from your family doctor before you begin an exercise or sports program.

## 2 WARM UP PERIOD

Spend 10 to 15 minutes warming up before starting your aerobic exercise. Exercises from Handouts 30, 31 and 32: EXERCISE SUPER COURSE, can be used for warm ups.

## 3 AEROBIC CONDITIONING PERIOD

Spend at least 30 minutes 3 times a week doing aerobic exercises like brisk walking, running, jogging, bicycling, swimming, jumping rope, roller skating or dancing. To improve your cardiovascular fitness, exercise hard enough so that your pulse rate falls within your *training heart rate range.*

To find your training heart rate, use this formula:

1. To figure out your maximum heart rate, use this formula:

   220 minus _____ = _____ beats per minute
   (your age) (max. heart rate)

2. Multiply your maximum heart rate by .70 and .85 to find your *training heart rate range:*

   _____ X .70 = _____ beats/minute
   (Max. heart rate) (*Minimum training heart rate*)

   _____ X .85 = _____ beats/minute
   (Max. heart rate) (*Maximum training heart rate*)

Use your training heart rate range as a guide to how hard you should exercise. You may be able to handle a different level of exercise than your friends. Start off at the lower rate and work up to a rate you can tolerate. Do not exceed your maximum training heart rate! Check your heart rate by taking your pulse every 5 minutes. If your pulse rate is below your minimum training heart rate, work a little harder, but if it is above your maximum training heart rate, slow down!

Aerobic conditioning is one key part of a total fitness game plan. For fun and total fitness, keep on the move with other activities like hiking or volleyball.

## 4 COOL DOWN PERIOD

After your aerobic exercising take at least 5 minutes to cool your body down until your pulse rate is close to your starting heart rate. Try walking after jogging, running, jumping rope or slow down the speed you are swimming, dancing, bicycling or skating. Try some stretching exercises too!

Add variety to your exercise program to maintain physical fitness.

Do what you like ... softball...badminton.....soccer...basketball...swimming.....horseback riding...tennis...frisbee..

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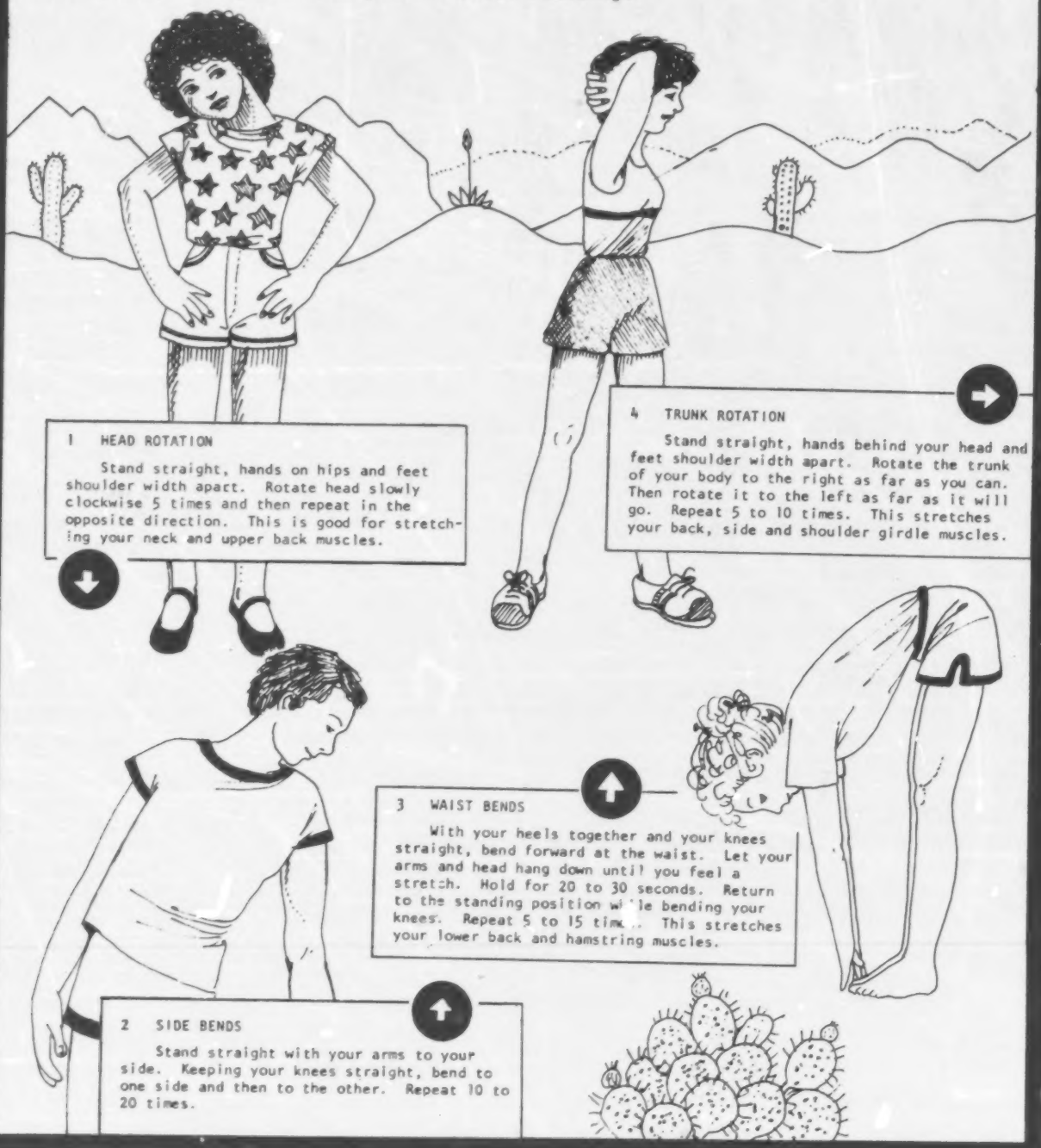
## EXERCISE SUPERCOURSE

Use some of these exercises in your warm-up and cool-down periods to get your body ready for any activity. These exercises can also help improve your flexibility! Spend from 5-15 minutes doing them both before and after your aerobic exercising period. The number of times you do each one varies, and depends on your fitness level. Remember, never stretch beyond the threshold of pain and gradually increase the number of repetitions. You will have less injury and soreness by doing these exercises slowly and without bouncing.



1 HEAD ROTATION

Stand straight, hands on hips and feet shoulder width apart. Rotate head slowly clockwise 5 times and then repeat in the opposite direction. This is good for stretching your neck and upper back muscles.

4 TRUNK ROTATION

Stand straight, hands behind your head and feet shoulder width apart. Rotate the trunk of your body to the right as far as you can. Then rotate it to the left as far as it will go. Repeat 5 to 10 times. This stretches your back, side and shoulder girdle muscles.

3 WAIST BENDS

With your heels together and your knees straight, bend forward at the waist. Let your arms and head hang down until you feel a stretch. Hold for 20 to 30 seconds. Return to the standing position while bending your knees. Repeat 5 to 15 times. This stretches your lower back and hamstring muscles.

2 SIDE BENDS

Stand straight with your arms to your side. Keeping your knees straight, bend to one side and then to the other. Repeat 10 to 20 times.

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5 SITTING STRETCHES

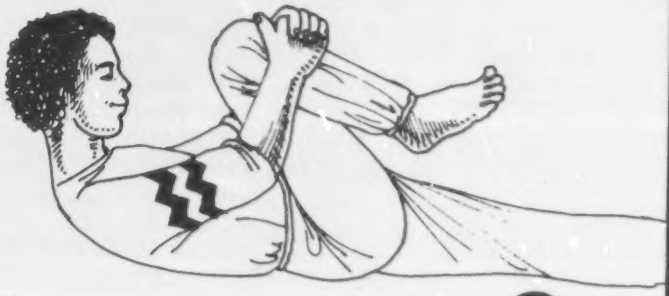
Sit on the floor with your legs out and knees pressed flat on the floor. Grasp behind your knees and pull your body slowly forward. Hold this stretched position for 5 seconds. Repeat 4 to 8 times. This is good for stretching your hamstring and lower back muscles.

8 HAMSTRING HURDLER STRETCH

Sitting on the floor, extend your right leg forward and bend your left leg back. Bend forward over your right leg until you feel a stretch in the back of your leg. Hold for 5 seconds. Repeat 4 to 8 times and then perform the exercise on the other leg. This is good for stretching your hamstrings.

6 BENT KNEE SIT UP

Lie on your back with your knees bent. Clasp your hands behind your head. Curl your head, shoulders and back up to a full sitting position. Touch your knee with the opposite elbow. Start with 5 repetitions and work up to 30. This strengthens your abdominal and hip flexor muscles.



7 SINGLE KNEE TO CHEST

Lie on your back with your legs out straight. Bring your right knee up to your chest pulling your knee as far forward as possible. Hold for 5 seconds. Repeat with the opposite leg. Do 3 to 9 repetitions. This stretches the muscles of the lower back and buttocks.

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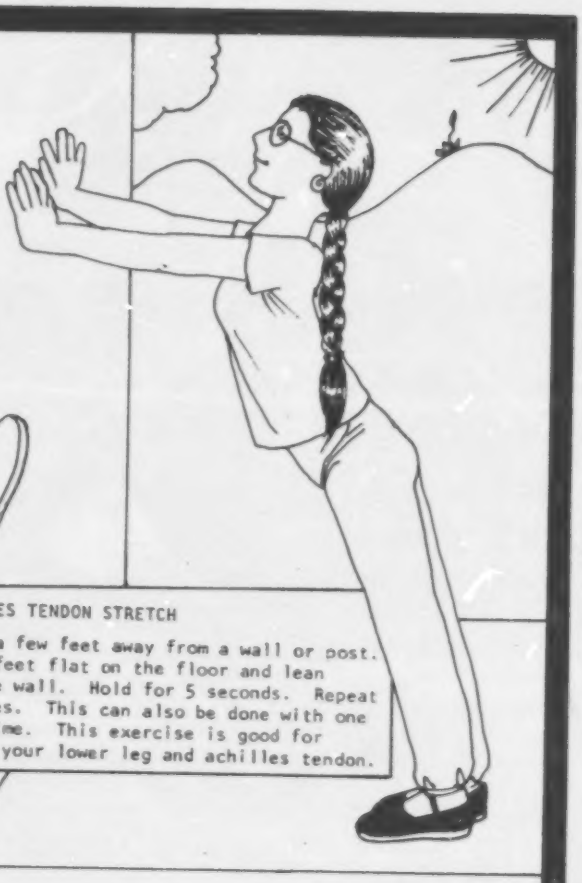
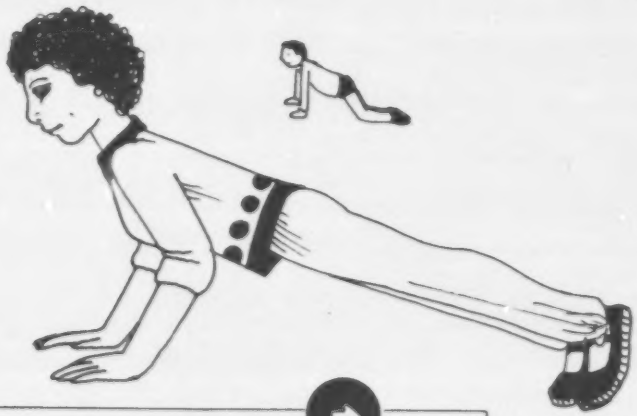
9 FOOTSIES

Sit with your legs stretched out. Rotate your foot clockwise through its entire range of motion. Then reverse directions. Flex and extend your toes and twist your foot inward and outward. Repeat several times. Perform this exercise on the other foot.



12 ACHILLES TENDON STRETCH

Stand a few feet away from a wall or post. Keep your feet flat on the floor and lean against the wall. Hold for 5 seconds. Repeat 4 to 8 times. This can also be done with one leg at a time. This exercise is good for stretching your lower leg and achilles tendon.



10 PUSH UPS

Lie on the floor in a prone position with your arms supporting your upper body weight, your feet extended backward and your toes supporting your lower body weight. Lower your chest to the floor keeping your back straight. Then push back up. Start with 10 and work up. Perform this exercise with the knees on the floor if you have limited strength in the upper body. When you can do up to 30, then try it with your legs straight. This exercise strengthens the muscles of the upper arm and shoulder girdle.

11 GROIN STRETCH

Sit on the floor with the soles of the feet together and knees pointing outward. Push slowly down on your knees. Hold for 5 seconds. Repeat 4 to 8 times. This helps stretch the groin muscles.

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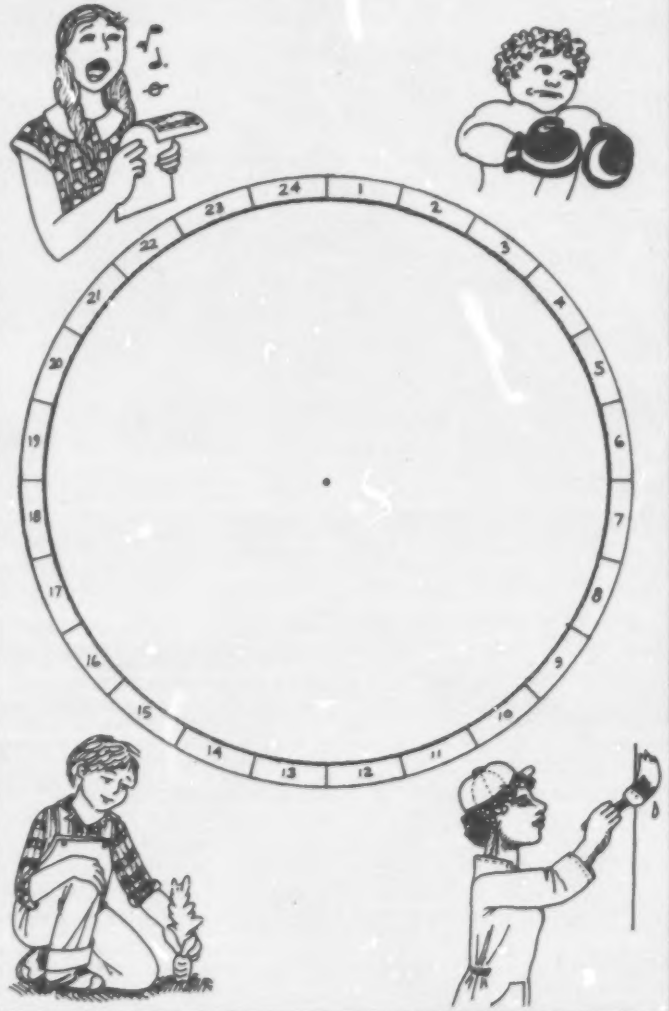
## FITNESS TIME CHECK OUT

This handout may help you tune into how you spend your time. Divide the pie graph below into slices. Make each slice represent the number of hours you spend daily on each of the five activity groups listed below.

| ACTIVITIES | Daily Amount of Time Spent on Each Activity MINUTES | HOURS |
|---|---|---|
| **SLEEPING**<br>1 CALORIE BURNED/MINUTE | | |
| **VERY LIGHT EXERCISE**<br>2 CALORIES/MINUTE<br>Riding in a car, bus, truck, or motorcycle<br>Singing<br>Sitting--reading, eating watching TV, school, on the phone, typing, piano playing, card playing | | |
| **LIGHT EXERCISE**<br>2-5 CALORIES/MINUTE<br>Croquet<br>Fishing<br>Golf<br>Hammering<br>Horseback riding<br>Housework<br>Painting<br>Sewing<br>Shopping<br>Shuffleboard<br>Volleyball<br>Walking leisurely | | |
| **MODERATE EXERCISE**<br>5-7 CALORIES/MINUTE<br>Baseball<br>Bicycling<br>Bowling<br>Dancing<br>Gardening<br>Hiking<br>Ping Pong<br>Scrubbing<br>Swimming leisurely<br>Tennis<br>Walking | | |
| **HEAVY EXERCISE**<br>7-12 CALORIES/MINUTE<br>Bicycle racing<br>Boxing<br>Climbing<br>Country or folk dancing<br>Football<br>Horseback riding at gallop<br>Running<br>Skiing<br>Soccer<br>Squash, handball<br>Weight Lifting | | |

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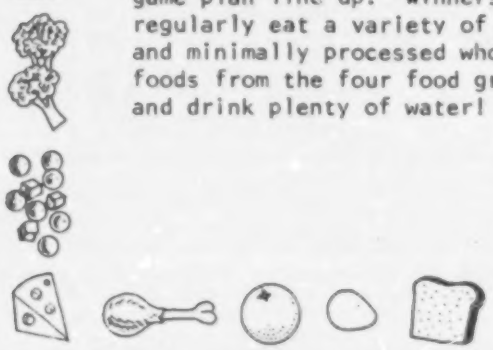
# FITNESS 6

This is the starting line-up for a winning food-fitness game plan. Nutrition Super Stars have every member of the line-up in their game plan for top performance.

## 1



The Fitness Food Guide is number one in the food-fitness game plan line up. Winners regularly eat a variety of fresh and minimally processed whole foods from the four food groups, and drink plenty of water!

## 2

Active people need extra energy or calories. Winners energize with calories from complex carbohydrates found in fruits, vegetables, and whole grain or enriched bread, tortillas, pasta and cereals.

**NUTRITION FLASH**

Carbohydrate loading has no advantage for continuous exercise which lasts less than an hour. Carbohydrate loading has special health risks for teenagers and should not be tried without expert advice!

## 3

The Fitness Food Guide has lots of protein...extra meat or protein supplements are not necessary and are expensive. The same goes for vitamin and mineral supplements!

## 4

Exercise means sweat and lots of it. Too much water loss means a weak spot in your game plan. Drink plenty of liquids before, during and after exercise to prevent too much body water loss. If you lose 1lb of weight during exercise, you need 2 cups of replacement liquids to keep your performance top rate. Cold water is the best thing to drink! Dilute fruit or vegetable juice and sports drinks with equal parts of water before you drink them to prevent stomach upsets.

## 5

Salt tablets are dangerous! The salt you lose in sweat is easily replaced by the salt and sodium in foods in the Fitness Food Guide.

## 6

The winning pre-game eating plan includes:

- eating at least 3 hours before heavy exercise.
- eating foods which have lots of complex carbohydrates, a little protein, and very little fat.
- drinking 2 to 3 cups of cold liquids.

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## NUTRITION-FITNESS HIT OR MYTH

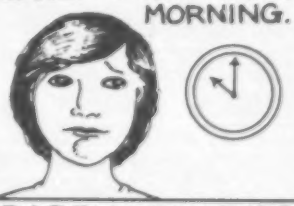
Maria is on the school track team. You are the coach. She is very unhappy with her performance and wants to improve it. Here's what Maria tells you:

I WORK HARD AT EVERY TRAINING PRACTICE. AFTERWARDS, I TAKE A SALT TABLET AND DRINK PLENTY OF COLD WATER.

I ALSO WATCH WHAT I EAT. I KNOW HOW IMPORTANT NUTRITION IS FOR FITNESS & SPORTS. EVERY DAY I EAT THE RECOMMENDED NUMBER OF SERVINGS FROM THE FITNESS FOOD PLAN.

I EXERCISE SO MUCH I KNOW I NEED EXTRA CALORIES. SO I EAT EXTRA SERVINGS FROM THE HIGH PROTEIN MEAT & MILK GROUPS. I ALSO DRINK 2-3 GLASSES OF PURE PROTEIN POWDERED DRINK. I KNOW THAT ATHLETES NEED EXTRA PROTEIN FOR STRONG MUSCLES & TOP PERFORMANCE.

I GET VERY NERVOUS JUST BEFORE EVERY RACE! I USUALLY GET PLENTY OF SLEEP THE NIGHT BEFORE THE LAST RACE I ENTERED DIDN'T START 'TILL 11 A.M. BUT I WAS TOO TENSE TO EAT THAT MORNING.



I HEARD FROM OTHER RUNNERS THAT SUGAR OR HONEY GIVES YOU QUICK ENERGY, SO I HAD A TABLESPOON OF HONEY ONE HALF-HOUR BEFORE THE RACE.

HALFWAY THROUGH THE RACE I FELT TIRED. MY MOUTH WAS DRY AND MY LEGS FELT LIKE LEAD...

I STOPPED AT THE WATER STATION AND RINSED OUT MY MOUTH. I REMEMBERED MY BROTHER TOLD ME NEVER TO DRINK DURING A RACE.

I BARELY FINISHED THE RACE! WHAT HAPPENED TO ME? WHAT CAN I DO SO I CAN RUN FASTER IN THE NEXT RACE?

Based on Maria's eating and training habits, what advice would you give her? What did Maria do wrong before the race? What did she do right? Can you identify the myths that she believes in?

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## HIT OR MYTH *ANSWERS*

Good advice the coach can give Maria:

She should drink water before, during, and after sports activities.

Maria should have a nutritious pre-game meal 3 to 4 hours before heavy exercise.

Things Maria has done wrong before the race:

Taking salt tablets
Eating extra portions of high protein foods
Using protein powdered drink
Not eating breakfast
Eating honey before a game
Never drinking during a race

Things Maria has done right:

Working hard at every training practice
Drinking plenty of water after practice
Regularly eating the recommended servings from the fitness plan

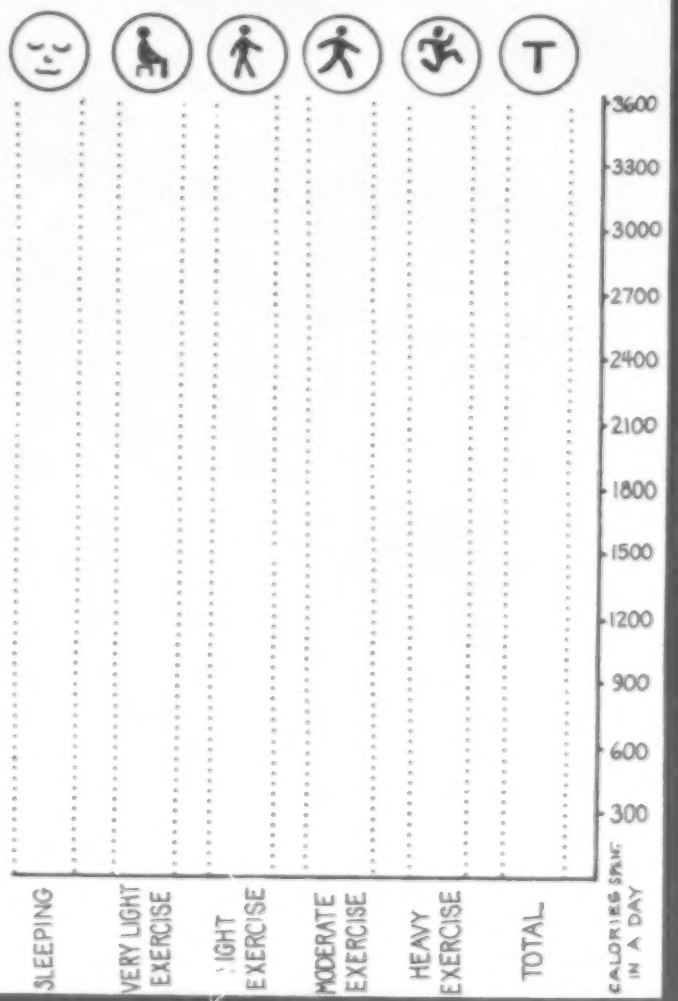
Myths Maria believes in:

Athletes need salt tablets
Athletes need extra amount of protein to build strong muscles
Eating honey provides quick energy just before a race
To avoid drinking water during a race helps improve performance

# CALORIE CHECK OUT

Check out how you spend your activity calories. Next to each activity group -- *sleeping, very light exercise, light exercise, moderate exercise, heavy exercise* -- record how many minutes you spend a day doing activities from that group. Multiply the minutes by the average number of calories it takes to do those activities. Record the calories for each group. This total will give you an estimate of how many calories you spend for a day. Graph the number of calories from each group. How many minutes and calories did you spend doing aerobic activities?

| ACTIVITIES | Daily Amount of Time Spent on Each Activity MINUTES | CALORIES |
|---|---|---|
| **SLEEPING**<br>1 CALORIE BURNED/MINUTE | | |
| **VERY LIGHT EXERCISE**<br>2 CALORIES/MINUTE<br>Riding in a car, bus, truck, or motorcycle<br>Singing<br>Sitting--reading, eating watching TV, school, on the phone, typing, piano playing, card playing | | |
| **LIGHT EXERCISE**<br>2-5 CALORIES/MINUTE<br>AVERAGE = 4 CAL/MIN.<br>Croquet<br>Fishing<br>Golf<br>Hammering<br>Horseback riding<br>Housework<br>Painting<br>Sewing<br>Shopping<br>Shuffleboard<br>Volleyball<br>Walking leisurely | | |
| **MODERATE EXERCISE**<br>5-7 CALORIES/MINUTE<br>AVERAGE = 6 CAL/MIN.<br>Baseball<br>Bicycling<br>Bowling<br>Dancing<br>Gardening<br>Hiking<br>Ping Pong<br>Scrubbing<br>Swimming leisurely<br>Tennis<br>Walking | | |
| **HEAVY EXERCISE**<br>7-12 CALORIES/MINUTE<br>AVERAGE = 9 CAL/MIN.<br>Bicycle racing<br>Boxing<br>Climbing<br>Country or folk dancing<br>Football<br>Horseback riding at gallop<br>Running<br>Skiing<br>Soccer<br>Squash, handball<br>Weight Lifting | | |
| TOTAL : | | |

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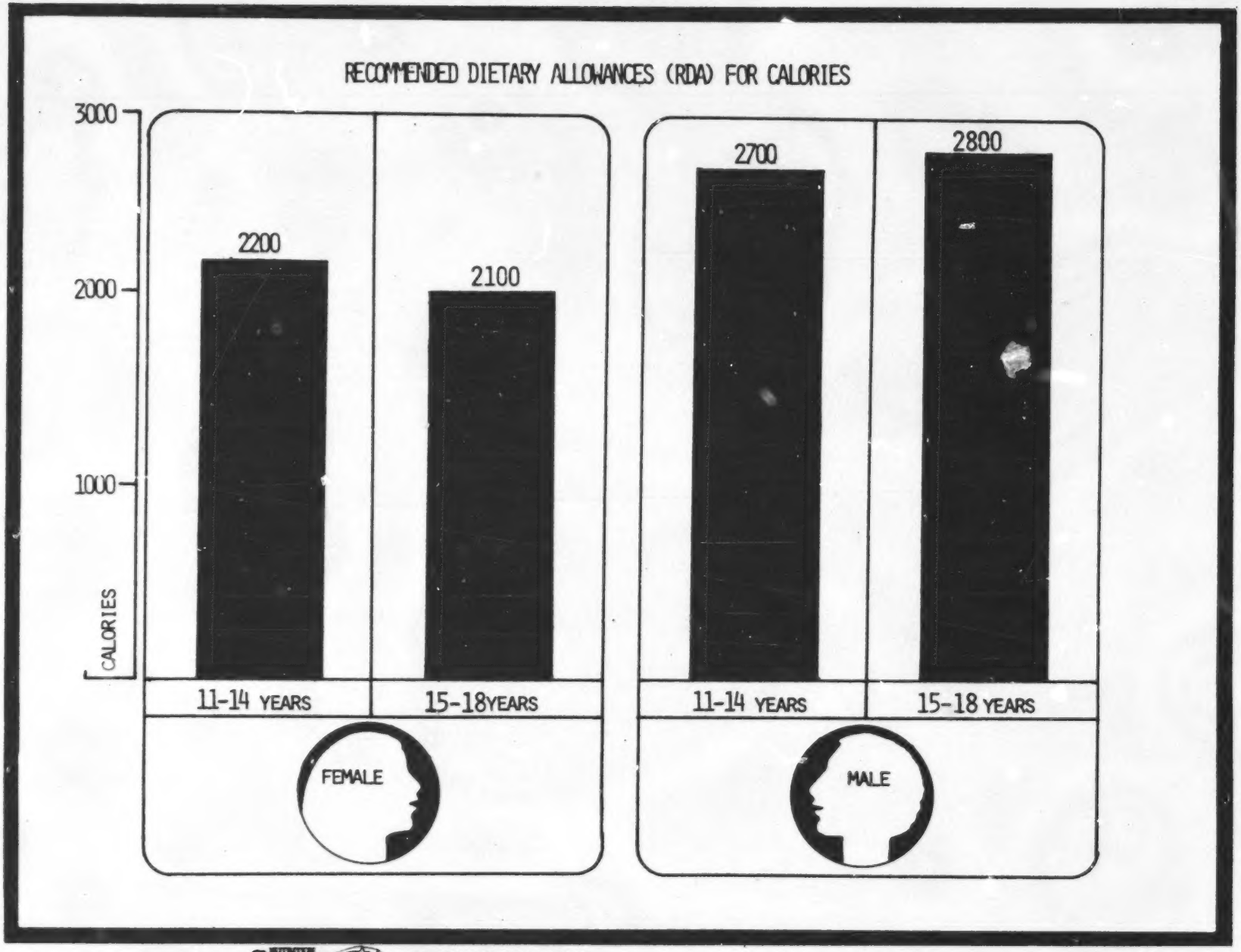


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## FOOD SAFETY SCRAMBLE

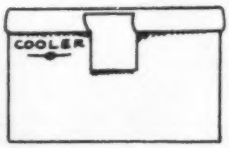
You can prevent food poisoning! All you have to do is learn how to safely handle food. Knowing the safest foods to buy and how to safely store them is the first prevention step. Look at the list of foods in each of the four boxes below. In box (1) draw a line from the foods which are safe to buy to the shopping cart. Draw a line from the foods which are not safe to buy to the store manager. For boxes (2-4) draw a line from the food item to the safest "storage" place.

### (1) AT THE MARKET

1. soldly frozen peas from the freezer
2. severely dented soup can
3. meat package with torn wrapper
4. head of lettuce
5. package of tortillas
6. hot dogs beside the checkout
7. cheese on bread shelf
8. milk from dairy case
9. cracked eggs in carton
10. apples

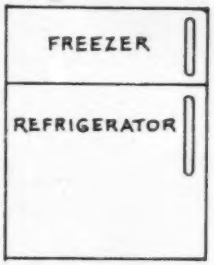
### (2) AT A PICNIC

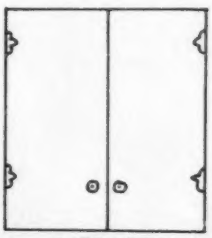
1. cold cuts
2. potato chips
3. canned fruit juice
4. hamburger patties
5. buns
6. pickles
7. hot dogs
8. potato salad
9. deviled eggs
10. tortilla chips




### (3) AT HOME

1. potato chips
2. chicken
3. opened canned goods
4. ice cream
5. milk
6. eggs
7. crackers
8. cheese
9. dried beans
10. orange




### (4) IN A BROWN BAG MEAL

1. canned frozen juice
2. peanut butter sandwich
3. fried chicken
4. frozen lunch meat sandwich
5. carrots and celery
6. a pear
7. carton of milk
8. burrito
9. egg salad sandwich
10. pizza

(Hint: Some things are better left at home unless safely packed to stay hot or cold.)

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## FOOD SAFETY SCRAMBLE *ANSWERS*

You can prevent food poisoning! All you have to do is learn how to safely handle food. Knowing the safest foods to buy and how to safely store them is the first prevention step. Look at the list of foods in each of the four boxes below. In box ① draw a line from the foods which are safe to buy to the shopping cart. Draw a line from the foods which are not safe to buy to the store manager. For boxes ②-④ draw a line from the food item to the safest "storage" place.

### ① AT THE MARKET

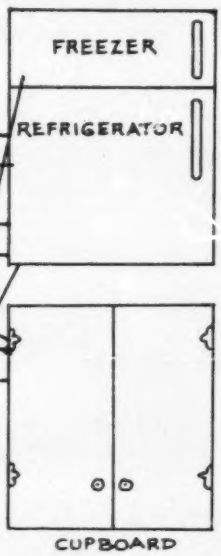
1. solidly frozen peas from the freezer
2. severely dented soup can
3. meat package with torn wrapper
4. head of lettuce
5. package of tortillas
6. hot dogs beside the checkout
7. cheese on bread shelf
8. milk from dairy case
9. cracked eggs in carton
10. apples

### ② AT A PICNIC

1. cold cuts
2. potato chips
3. canned fruit juice
4. hamburger patties
5. buns
6. pickles
7. hot dogs
8. potato salad
9. deviled eggs
10. tortilla chips

### ③ AT HOME

1. potato chips
2. chicken
3. opened canned goods
4. ice cream
5. milk
6. eggs
7. crackers
8. cheese
9. dried beans
10. orange




### ④ IN A BROWN BAG MEAL

1. canned frozen juice
2. peanut butter sandwich
3. fried chicken
4. frozen lunch meat sandwich
5. carrots and celery
6. a pear
7. carton of milk
8. burrito
9. egg salad sandwich
10. pizza

(Hint: Some things are better left at home unless safely packed to stay hot or cold.)

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## SAVE THE NUTRIENTS

Proper food storage is essential for keeping food sanitary and safe to eat. How you store food also affects its nutrient content. Here are some tips how to store and cook food to *save the nutrients*.

---

Store dry and bulk foods like flour, salt, and sugar in a cool, dry place.

Canned goods may be kept safely for a year or more, but check them periodically for bulges.

Refrigerate meats and dairy products immediately.

Keep frozen foods at temperatures below freezing [32°F (0°C)] until used.

Store fruits and vegetables in a cool or cold dark place.

Check for expiration dates on packaged perishable foods like meat, milk, cheese and yogurt.

STORE RIGHT

---

COOK RIGHT

How you prepare food affects it nutrient content. Here are some suggestions for cooking food for maximum nutrient retention.

Steam vegetables rather than cook them in water.

Save any liquid which is left from cooked vegetables and either use it at a later date in soups or casseroles or serve it with the vegetables.

Cook vegetables to the tender-crisp stage and not to the soft-mushy stage.

Try baking, broiling or boiling meat, fish and poultry instead of frying.

These cooking methods will help lower the amount of fat in the diet.

---

Test yourself to see if you now know how to save the nutrients!

QUESTIONS: T for true or F for false.

T F 1. Vegetables should be cooked to the soft-mushy stage for maximum nutrient retention.

T F 2. One way of cooking vegetables to retain nutrients is steaming them to the tender-crisp stage.

T F 3. Store all dry and bulk foods in the refrigerator.

T F 4. Check stored canned goods periodically for bulges.

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## SAVE THE NUTRIENTS *ANSWERS*

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Test yourself to see if you now know how to save the nutrients!

QUESTIONS: T for true or F for false.

T (F) 1. Vegetables should be cooked to the soft-mushy stage for maximum nutrient retention.

(T) F 2. One way of cooking vegetables to retain nutrients is steaming them to the tender-crisp stage.

T (F) 3. Store all dry and bulk foods in the refrigerator.

(T) F 4. Check stored canned goods periodically for bulges.

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# SAFETY IN THE BAG

When you come down with cramps, diarrhea, vomiting and/or fever, you might think it's "a bug that's going around." Or if one of your parents missed a couple of days work with the same symptoms, everyone figured he or she "caught something somewhere." The bug you caught or caught you, may have been food poisoning. You may have gotten it from a brown bag lunch. Here are some questions and answers which will help you pack a safe brown bag lunch.

Q. What is the real key to packing a safe "brown bag" lunch?

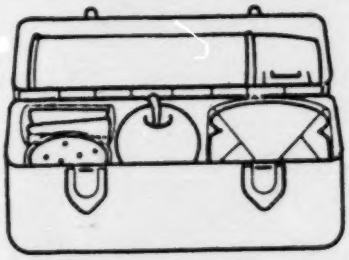
*A. In short, keep hot foods hot, cold foods cold, and everything clean. Bacteria thrive at temperatures between between 40°F and 140°F (4°C-60°C). Food should not be held in this temperature zone for more than two or three hours, counting preparation time. Keep utensils and countertops used in preparing lunches clean. Wash them thoroughly with soap and hot water. The same goes for your hands. Also, wash vacuum bottles and rinse them in boiling water after each use.*

Q. How can I keep hot foods hot and cold foods cold?

*A. The familiar vacuum bottle is a good way to keep certain kinds of food hot or cold. You should put your lunch in the refrigerator - if you have one. If not, put a cold device into the lunch bag: a commercial gel, a plastic bag filled with ice cubes, or a can of cold beverage. Or you might try freezing certain types of sandwiches They thaw in time for lunch and help keep the rest of the lunch cool until then. One other thing to remember... letting your lunch sit in a warm place lets bacteria grow.*

Q. Should I use a lunchbox instead of a paper bag?

*A. That's a good idea. Lunchboxes, especially insulated ones, hold the cold much better than paper bags, and are easy to keep clean and sanitary. If you do use the familiar "brown bags", however, buy them specifically for lunches and use them once.*



Q. How would I know if I have food poisoning?

*A. You wouldn't, without thorough medical tests. But if you have severe headache, diarrhea, vomiting, abdominal cramps and fever 2-36 hours after eating, there's a pretty good chance the culprit is food poisoning. Because their symptoms are similar, "flu" and food poisoning are often mistaken for each other.*

Q. What kinds of meat and poultry products are best for "brown bag" lunches?

*A. Almost any meat or poultry can be used if it's cooked and handled properly.*

Q. How about soups, stews, and chili?

*A. If these products are boiling hot when poured into a sterile vacuum bottle, you shouldn't have any problem with them at all.*

Q. Are special precautions needed with fruits and vegetables?

*A. Just be sure they're clean and well scrubbed.*

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# FOOD SAFETY PUZZLE

Dangerous bacteria growth may not affect the way food looks or tastes. The best way to avoid food poisoning is to prevent dangerous bacteria growth! *Temperature* and *cleanliness* are the keys to prevention of bacteria growth. Keep cold things cold and hot things hot!

If chilled food is to be heated prior to serving, be sure the heat penetrates the food as quickly as possible. A slow rise in temperature provides an excellent breeding ground for bacteria to multiply. Later these large numbers can continue to rapidly grow in the intestines of an unknowing victim and cause nausea, vomiting, or diarrhea.

Wash your hands before handling food. The Center for Disease Control estimates that at least 20% of the food-borne illness cases could be reduced if people would wash their hands before handling food.

## FOOD TO KEEP BELOW 40° F.

potato salad
egg salad
deviled eggs
tuna salad
sandwich meats
milk and yogurt
cream/custard pastries
puddings
uncooked meat
opened containers of juice
cooked meats to be served chilled (fried chicken, meat sandwiches)
cheese
pizza
eggs

## FOOD TO KEEP ABOVE 140°F

cooked foods to be served hot

stews
gravies
soup
sandwiches
tacos
pizza
hot dishes
meat

## TO KEEP COLD FOOD COLD *

- before packing for travel, place food in freezer for 10-20 minutes
- after chilling, wrap food in at least 10 layers of newspaper
- surround food with frozen cans of non-carbonated beverages
- store in plastic or metal lined ice bucket (pre chilled with ice for 15 minutes)
- place in water-tight container, submerge in water -- ocean, stream, or lake

## FOOD TO KEEP ANY TEMPERATURE

fresh fruits
fresh vegetables
breads
tortillas
cookies
crackers
pickled foods
popcorn

## TO KEEP HOT FOOD HOT *

- wrap in at least 10 layers of newspaper
- store in an insulated chest with bunched paper to fill air spaces
- store in an ice bucket (preheated with boiling water)
- keep on or near hot coals

* Food should be thoroughly *chilled* or *heated* prior to being packed for travel.

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## NUTRITION IN THE BAG

Hiking is good exercise and fun!! Plan a bag lunch for a hike. Here are some hints for making *super* bag lunches. Use these ideas any time you make a lunch -- for school, for a picnic, camping or hiking.

Pack individual packages of cheeses, nuts, dried fruits or seeds. To save money, buy these items in large amounts and make your own packages.

Sandwiches can be frozen if they do not contain mayonnaise, salad dressing, hard-cooked egg whites, raw vegetables or sliced natural cheeses. Individually wrap them in waxed paper or plastic wrap and then in foil. A frozen sandwich will thaw in two to three hours.

Top raisin bread with peanut butter and banana slices. This is a sandwich that's loaded with energy and is easy to pack.

Fix a trail mix using any combination of the following:

Spoon size shredded wheat
Dried fruits like banana chips, raisins or apricots
Dry roasted nuts
Seeds

Cut up a banana into bite-sized pieces and roll them in crushed dry roasted peanuts. Pack several of your favorite fruits for variety!

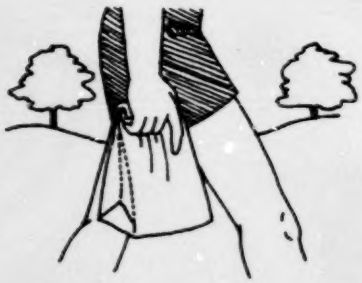
Core an apple or pear and stuff it with cheese or peanut butter.

If you want to pack a salad, store the salad greens and dressing separately. Salad greens will stay crisp and fresh in a closed container. Use spice bottles or other small containers for the dressing. Toss just before eating.

To keep raw vegetables crisp, wrap them first in damp paper towels and then in plastic wrap.

Freeze small cans of fruit or vegetable juices and put them into your lunch container; they keep foods cool and thaw out by lunch time.

REMEMBER: KEEP HOT FOOD HOT and COLD FOOD COLD and EVERYTHING CLEAN!!



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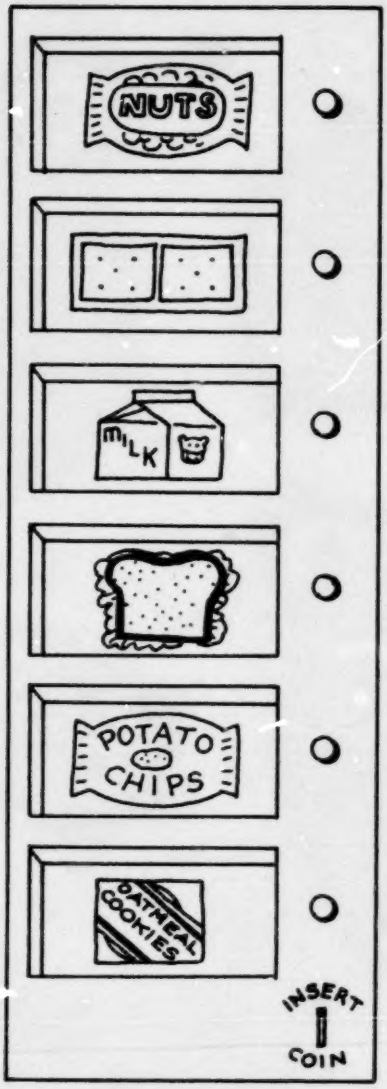
## VENDING MACHINE QUICK BITES




Vending machine foods can give you good nutrition on the go! Here is a list of high nutrient-density foods that are nutritional best bets from typical vending machine choices. The recommended foods are high nutrient-density foods.*

·*CHOOSE NUTS, NUT-AND-SEED, AND FRESH FRUIT OVER SWEETS* - You get more vitamins, minerals, and protein for the calories you eat: 1 oz. peanuts = 160 cal.; apple = 100 cal.; orange = 65 cal.; 1 oz. chocolate bar = 150 cal.

·*COMBINATIONS OF PEANUT BUTTER CRACKERS ARE A BETTER CHOICE THAN PASTRIES OR COOKIES* - You get more protein and less sugar for fewer calories: 1½ oz. peanut butter crackers = 210 cal.; 1 sweet roll (4½" diameter) = 275 cal.

·*DRINK FRUIT JUICES OR MILK INSTEAD OF CARBONATED BEVERAGES* - You get more vitamins and minerals for your money and calories.

·*INSTEAD OF A DANISH OR A CUPCAKE WITH A GOOEY SUGAR FILLING, CHOOSE CHEESE-CRACKERS, POPCORN, OR SANDWICHES* - Save your teeth from a sugar assault.

·*POTATO CHIPS, PRETZELS, AND CORN CHIPS HAVE LESS SUGAR AND A FEW MORE VITAMINS AND MINERALS THAN MOST CANDY BARS* - But it's a nutritional trade-off since chips usually contain more salt or sodium.

·*IF YOU CHOOSE SOMETHING SWEET, PICK NUT OR PEANUT BUTTER-FILLED CANDY OR OATMEAL, PEANUT BUTTER, AND FRUIT-FILLED COOKIES* - Nuts, fruit, and oatmeal add some vitamins and minerals to the sweet calories.

If you find yourself getting quick bites from vending machines and would like to have more high nutrient-density choices, consider *asking for a change!* Many vending machine suppliers offer trail mixes, unsalted nuts, sunflower seeds, and dried fruit mixes. Some machines dispense fresh fruit, yogurt, soups, milk, and sandwiches. If lots of vending machine customers ask for and buy high nutrient density foods, companies will be more likely to sell them! Speak up for good nutrition choices where you buy snacks.

*High nutrient-density foods have lots of nutrients like vitamins and minerals or protein in comparison to the amount of calories they contain.

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*POSTER*

Curriculum Kit Kick-Off Poster -
"Shape Up America - Exercise - Eat Right"
$1.00 each

Tupperware Educational Service
P.O. Box 2353
Orlando, Florida 32802

CLASS 2

*REFERENCE*

Fuels for Muscle Power

Provided with 7th/8th grade curriculum, page no. 107

CLASS 3

*MATERIALS*

Agar petri dishes

May be purchased from any scientific supply company.

CLASS 7

*MATERIALS*

Adipometer/Skinfold Calipers
5 calipers for $15.00 or 1 kit with
directions, tape and calipers, $4.00

Ross Laboratories
585 Cleveland Avenue
Columbus, Ohio 43216

CLASS 8

*FILMSTRIP/CASSETTE*

"Nutrition and Exercise"

Dairy Council of Arizona
4625 E. Ft. Lowell Road
Tucson, AZ 85712
Phone: 795-5759

or

Dairy Council of Arizona
2008 S. Hardy Drive
Tempe, AZ 85282
Phone: 968-7814

or

National Dairy Council
6300 N. River Road
Rosemont, Illinois 60018



Continued on Reverse

CLASS 8 CONTINUED

*FILM*

"Nutrition: Fueling the Human Machine"

Dairy Council of Arizona
4625 E. Ft. Lowell Road
Tucson, AZ 85712
Phone: 795-5759

or

Dairy Council of Arizona
2008 S. Hardy Drive
Tempe, AZ 85282
Phone: 968-7814

or

National Dairy Council
6300 N. River Road
Rosemont, Illinois 60018

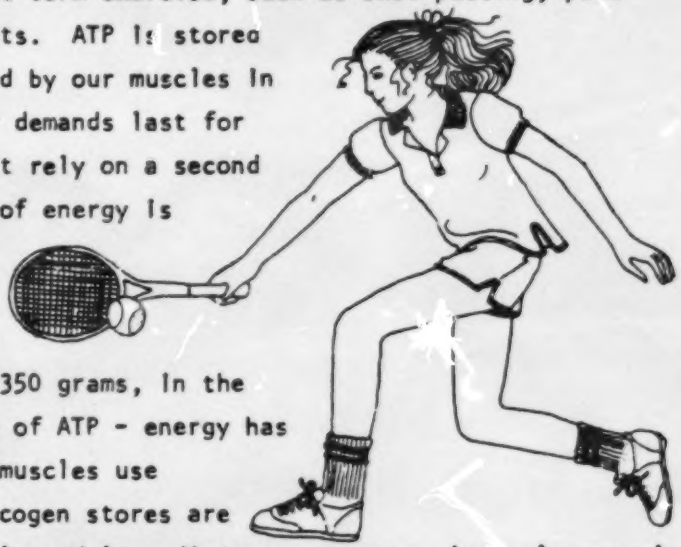
Additional instructional aids are available through the Nutrition Education Regional Resource Centers. For more information, contact the Food and Nutrition Division of the Arizona Department of Education, 1535 W. Jefferson, Phoenix, Arizona. (602) 255-3362 or Toll Free 1-800-352-4558.

# Fuels For Muscle Power

What fuels the muscles? The body needs energy for every activity whether it is digesting food or climbing trees. FOOD ENERGY supplies our bodies with power, just as a gallon of gas powers our car. Our bodies use three different types of fuel when we exercise. These are: ATP - energy, glycogen (the storage form of carbohydrate), and fat. The type of fuel the muscles will use for exercise depends on:

1. HOW SOON the energy is needed by the body.
2. HOW HARD the muscles must work.
3. HOW LONG the activity lasts.

When a sprinter tears down the track during a 60-yard dash, he needs his energy IMMEDIATELY for a short period of time because he is working his muscles at their MAXIMUM. The sprinter is relying on ATP (adenosine triphosphate) for his energy. You have already learned that the end products of digestion - fatty acids, amino acids, and sugar - can be burned for energy. The liberated energy, in turn, is stored in the magical ATP molecule. ATP, a chemical compound, is stored in the muscles for instant power. ATP is also the ultimate fuel which ALL muscle cells need in order to do their work. OUR bodies use ATP to supply energy for SUDDEN BURSTS of activity in intensive, short-term exercise, such as shot-putting, pole vaulting, or track and swimming sprints. ATP is stored only in very small amounts and is used by our muscles in a matter of minutes. When the energy demands last for more than brief spurts the muscle must rely on a second source of energy. The second source of energy is GLYCOGEN, the storage form of carbohydrate. The body makes glycogen from glucose (a simple sugar) and stores it in LIMITED amounts, about 350 grams, in the liver and muscles. When our supplies of ATP - energy has been exhausted through exercise, our muscles use GLYCOGEN to restore ATP. Maximum glycogen stores are most important for athletes like middle and long distance runners, since glycogen is

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a major source of energy for heavy exertion lasting more than a few minutes. Glycogen stores also seem to be the KEY to ATHLETIC PERFORMANCE and determines how long our muscles are able to perform. What happens when a muscle runs out of glycogen? That muscle will become uncoordinated and begin to hurt. It is called "HITTING THE WALL", a very common phenomenon during endurance competition. With will-power you can keep on going after "hitting the wall", and your muscles will burn FAT, blood sugar, and finally, their own tissue. When this happens every movement becomes extremely painful. A large portion of our glycogen stores will be used up within the first twenty minutes. Then our bodies will start to use FAT as well as glycogen for muscle fuel. Even the thinnest athlete cannot run out of fat to burn for muscle fuel.

EAT TO BUILD UP MUSCLE FUEL -- A good diet - one based on meat, milk, fish, poultry and eggs, whole-grain cereals, legumes and nuts, leafy green vegetables, and other fruits and vegetables - will meet all the nutritional requirements of athletes and persons engaged in hard physical labor. Vitamin pills and special supplements are not needed in super-normal doses and have not been proven to increase athletic performance. Your diet should include well-balanced proportions of CARBOHYDRATES, FATS, and PROTEIN to fuel your muscles. REMEMBER - - -carbohydrate is stored in the liver and muscles in the form of glycogen. GLYCOGEN STORES seem to be the KEY fuel for endurance. FATS are also an important part of the winning food line-up. It is a secondary source of energy especially during the latter stage of endurance sports. Fat is stored in the muscles under the skin and around the inner organs. Although PROTEIN is never a source of immediate energy and a poor source of energy during exercise, don't pass it up! PROTEIN is needed to build muscle tissue. Protein supplements or large quantities of protein are NOT needed to build muscle and strength in an athlete. An athlete will be supplied with plenty of protein when he increases his overall food intake to supply extra calories for exercise.

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net PROGRAM

NUTRITION Super Stars

Arizona Basic Skills Competencies

Cross Reference Matrix

ARIZONA DEPARTMENT OF EDUCATION
Carolyn Warner, Superintendent
Dr. Jim Hartgraves, Deputy Superintendent
Dr. Ray Ryan, Deputy Superintendent

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| | 3 | 83,84,87 | 81,84 | | 85,95 |
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| | 3 | 93,94,96,97,101 | 93,96-98 | | |
| | 4 | 92-95,97,101 | 93,96-98,100 | | |

| CURRICULUM | | COMMUNICATION | | COMPUTATION | CITIZENSHIP |
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| | 4 | 101 | 92,97,99 | | |
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| 9 | 1 | 93,94,97,101 | 91-93,96-99 | | 108 |
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| 10 | 1 | 92-94,96-98,101 | 91-93,97,98 | | |
| | 2 | 92-98 | 91-93,97,98 | | |

| CURRICULUM | | COMMUNICATION | | COMPUTATION | CITIZENSHIP |
|---|---|---|---|---|---|
| Class | Activity | Speaking/Writing | Listening/Reading | | |
| 10 | 3 | 93,94,97,98,101 | 91-93,97,98 | | |
| | 4 | 92-94,96-98,101 | 91-93,97,98 | | |

## COMMUNICATION SKILLS CHART
## LISTENING/READING

### SEVENTH GRADE

80. Distinguishes degrees of comparison in adjectives.
    For example: large, larger, largest.
81. Distinguishes between the main idea and the supporting ideas.
82. Organizes the events of a story into a logical order.
83. Recognizes story elements: story line (plot), characters, environment (setting) and theme.
84. Identifies the author's purpose.
85. Uses a dictionary for a variety of purposes.
    For example: to identify parts of speech, to define words.
86. Skims to find the answer to a specific question.
87. Uses the library to locate information for class assignments.
88. Understands the meaning of a word by the way it is used in a sentence.
89. Adds new words to sight vocabulary through reading in all classes.
    For example: science, music, Arizona history.

### EIGHTH GRADE

90. Distinguishes degrees of comparison in adverbs.
    For example: slow, slower, slowest.
91. Answers and asks questions about cause and effect (Why? How?).
92. Identifies if the environment (setting) of a story is real, historical, or imaginary
93. Identifies author's point of view.
94. Locates and uses information in an encyclopedia
95. Skims newspaper to find specific information.
96. Chooses title that best expresses the main idea.
97. Relates reading to personal experience.
98. Applies good study habits.
99. Applies test-taking skills.
100. Selects summary statement which best shows the idea of a story.

## COMMUNICATION SKILLS CHART
## SPEAKING/WRITING

### SEVENTH GRADE

78. Tells how language is used in various occupations.
79. Organizes notes into main idea and supporting details.
80. Proofreads and edits own writing.
81. Identifies the parts of a compound sentence.
    For example: Sue went to town, but I went home.
82. Recognizes complete and incomplete sentences.
83. Identifies singular and plural pronouns. For example: him, them.
84. Identifies adjectives. For example: beautiful, smooth.
85. Identifies adverbs. For example: slowly, soon.
86. Writes a report based on a reading selection.
87. Uses apostrophes ( ' ), commas ( , ) and quotation marks (" ").
88. Capitalizes proper nouns and titles. For example: Gila, Navajo, Mrs., Tuesday.
89. Writes legibly in completing assignments.

### EIGHTH GRADE

90. Writes for business purposes. For example: answering an advertisement.
91. Writes conclusions to stories.
92. Uses an outline to organize notes.
93. Identifies the topic sentence of a paragraph.
94. Chooses correct verb to agree with the subject.
95. Identifies possessive pronouns. For example: his, mine.
96. Selects helping verbs. For example: They are coming soon.
97. Identifies prepositions and objects of prepositions.
    For example: Please come with us.
98. Selects conjunctions. For example: and, or, nor.
99. Punctuates a run-on sentence correctly.
    For example: John is my friend. He will go too.
100. Identifies errors in capitalization.
101. Uses apostrophes ( ' ), commas ( , ), quotations marks (" ") and colon ( : ).

## COMPUTATION SKILLS CHART
7-8

### SEVENTH GRADE

83. Performs any division of decimals problem.
84. Changes decimals or fractions to percents.
    For example: $\frac{1}{4} = \frac{25}{100} = .25 = 25\%$
85. Reads and writes Roman Numerals from I through 1,000 (I - M).
86. Solves two-step word problems involving any of the four operations: addition ( + ) subtraction ( - ), multiplication ( x ), division ( ÷ ).
87. Finds multipliers of any number less than 100.
88. Solves one-step word problems using fractions, decimals or percents.
89. Recognizes metric prefixes: For example: centi (100), kilo (1,000), milli (.001).
90. Measures the volume of a cube.
91. Measures angles using a protractor.
92. Measures length and weight in standard and metric units.

### EIGHTH GRADE

93. Performs problems using ratio and proportions. For example: 4:2 = 10:5.
94. Performs multiplication and division problems using percent.
95. Arranges any number of decimals, fractions and percents by size (from largest to smallest or smallest to largest).
96. Solves two-step word problems using fractions, decimals or percents.
97. Finds the least common multiple of any two numbers less than 100.
98. Finds the greatest common multiplier of any two numbers less than 20.
99. Determines the area and circumference of a circle.
100. Understands the difference between "obtuse" (∟) and "acute" (∠) angles.
101. Performs subtraction problems involving time (differences between seconds, minutes, hours, days, months, years). For example:
    11:30 a.m.
    -9:35 a.m.
    1:55 (Difference)
102. Understands the geometric concepts of points, lines, planes and line segments.
103. Understands the concept of symmetry.

## CITIZENSHIP SKILLS CHART
7-8

### SEVENTH GRADE

85. Works without supervision.
86. Exercises leadership when appropriate.
87. Recognizes the value of patriotism.
88. Recognizes the conflicts that might arise from membership in many groups.
89. Describes role of political parties.
90. Describes the meaning of the Pledge of Allegiance.
91. Cooperates with others to achieve mutual goals.
92. Describes how U.S. became a country.
93. Shows confidence in own abilities.
94. Describes where government services can be obtained.
95. Knows outcome of personal decisions.
96. Describes how worldwide developments have contributed to human rights.

### EIGHTH GRADE

97. Discusses relationship between heredity and environment.
98. Describes the relationships between the tribal, state and federal governments.
99. Describes how federal and state laws are made.
100. Compares U.S. government to other countries' political systems.
101. Describes registration and voting procedures.
102. Recognizes illogical thinking in arguments.
103. Takes part in school government.
104. Uses democratic processes in making decisions.
105. Displays courtesy, tact and manners when dealing with classmates, teachers and adults.
106. Recognizes how own rights may conflict with others.
107. Accepts the right of others to adopt opposing positions.
108. Describes how human actions affect the environment.